Servicing and
repair instructions

SOMNOsmart 2

smart PAP-device WM 24900

SOMNOsmart 2 with SOMNOclick WM 24950

SOMNOsmart 2 with SOMNOclick 300 WM 24975

SOMNOset

Titration Device WM 23200

SOMNOset with SOMNOsupport WM 23210

SOMNOsoft +

CPAP device with softPAP exhalation relief and therapy monitoring WM 24600

SOMNOsoft + with SOMNOclick WM 24610

SOMNOsoft + with SOMNOclick 300 WM 24675

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Introduction

For decades Weinmann has been developing, manufacturing and marketing devices for sleep apnoea therapy, inhalation therapy, oxygen therapy and emergency medical care.

With its SOMNO*comfort* and SOMNO*vent* S and ST, and also SOMNO*smart* 2, SOMNO*set* and SOMNO*soft* +, Weinmann offers a graduated therapy concept from treatment of sleep-related respiratory disorders to treatment of global respiratory insufficiency.

The aim of these service and repair instructions is to familiarize you, **as a trained expert in the field**, with the function, technology, servicing and repair of the SOMNO*smart* 2, SOMNO*set* and SOMNO*soft* +. This will enable you to give your customers proper instructions, eliminate faults yourself, perform the tests specified in the operating instructions, carry out any repairs and service the device in accordance with these service and repair instructions.

In the event of a guarantee claim, the devices must be sent to Weinmann.

To enable us to process ex gratia requests or warranty claims, please enclose the customer's proof of purchase (invoice) with the device.

Repairs or servicing work may be performed only by Weinmann or by trained specialist staff.

You are responsible for repairs carried out yourself and for their warranty!

Use only **original Weinmann spare parts** for repairs.

Please bear in mind:
Your customer trusts you and relies on your expert capability, just as you rely on Weinmann.

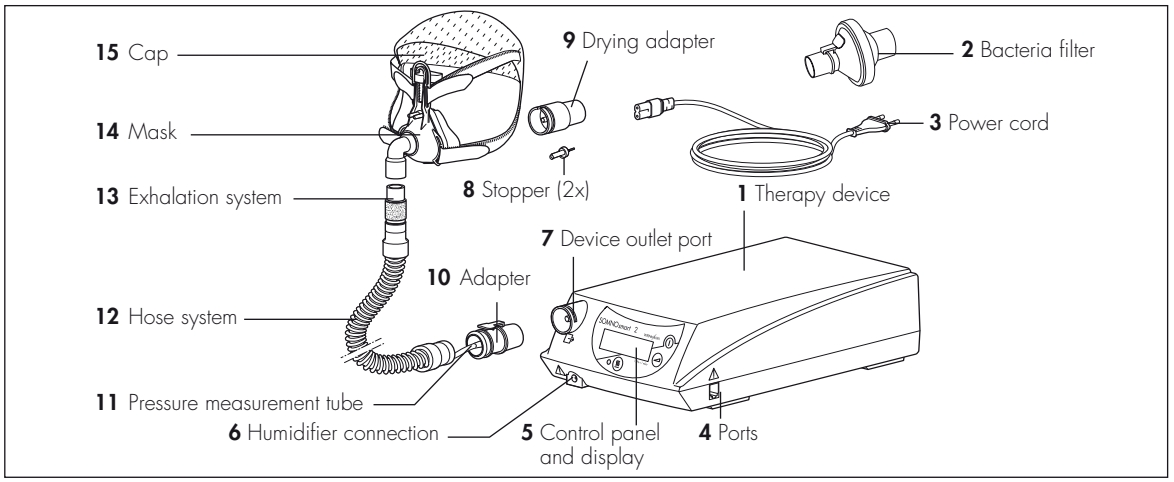
Note:

For the following information, please consult the Operating Instructions for the individual devices:

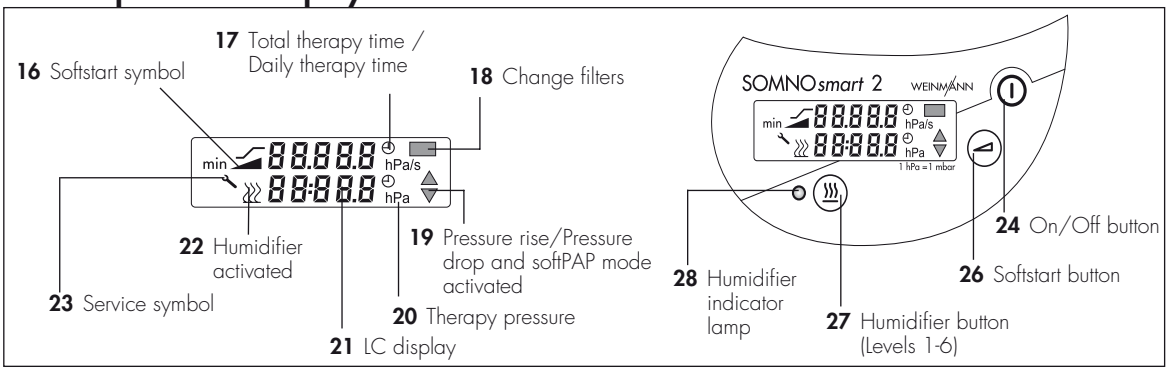
- Safety instructions
- Preparing for use
- Operation
- Cleaning and disinfecting after use
- Guarantee

1. Overview

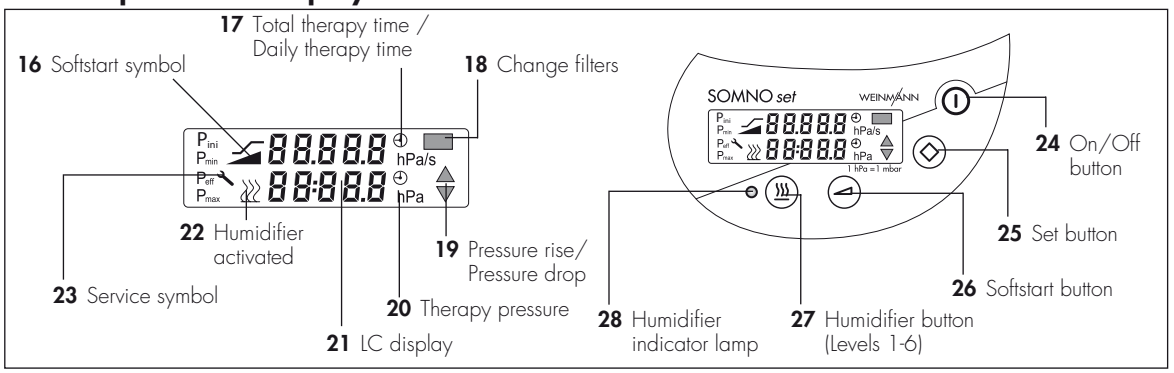
SOMNO*smart* 2, SOMNO*set* and SOMNO*soft* +



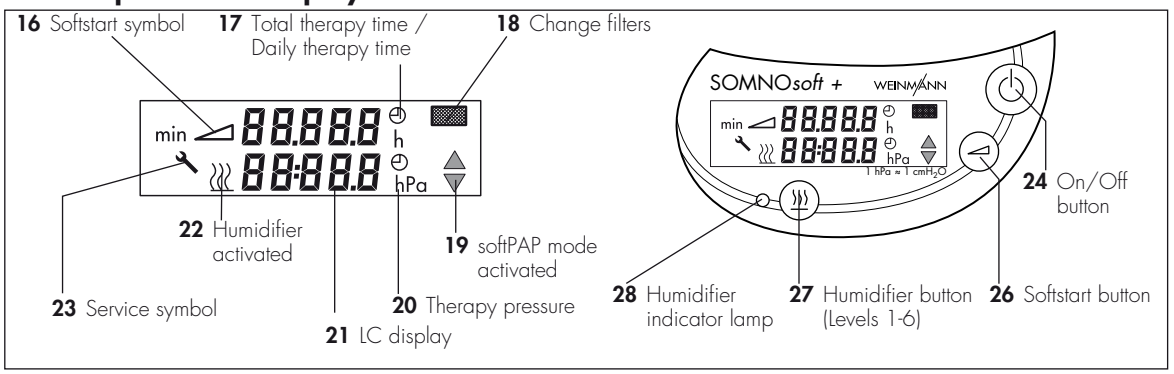
Control panel and display SOMNO*smart* 2



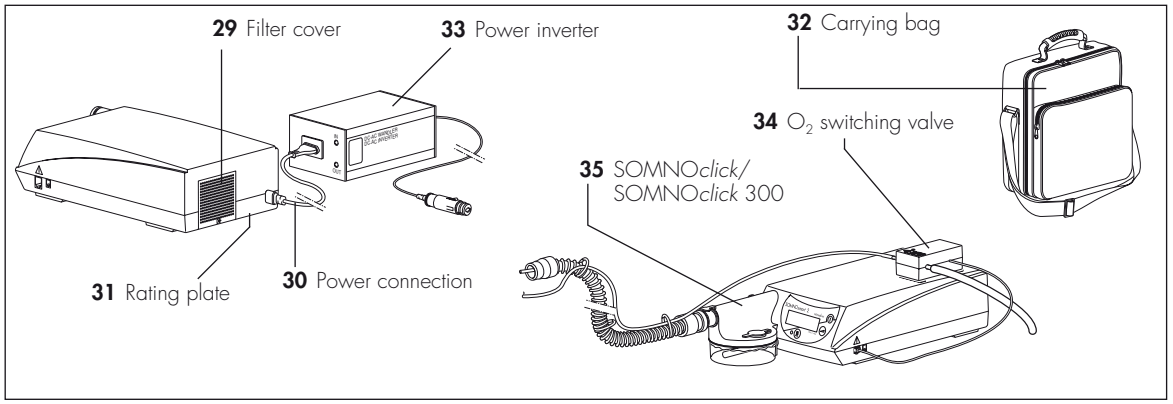
Control panel and display SOMNO*set*



Control panel and display SOMNO*soft* +



Device combinations



2. Description

Note:

SOMNO*smart* 2, SOMNO*set* and SOMNO*soft* + are of largely identical basic design. They differ only in the software, display and fascia film. SOMNO*soft* + has no oscillation generator and no microphone.

2.1 Purpose of SOMNO*smart* 2

SOMNO*smart* 2 is a smartPAP device for treating sleep-related respiratory disorders.

SOMNO*smart* 2 generates positive airway pressure (PAP).

SOMNO*smart* 2 is a self-regulating device. It recognizes respiratory events and varies the airway pressure accordingly.

While the patient is asleep, the airways are braced by the air pressure generated.

Airway pressure is administered by means of a mask.

SOMNO*smart* 2 can be used for people aged 12 years or more.

SOMNO*smart* 2 from software version 6.0; in general from device no. 10,000: The softPAP mode increases patient comfort by means of a brief pressure reduction during the transition from inhalation to exhalation.

Important!

SOMNO*smart* 2 can reliably prevent closure of the airways only if the upper and lower pressure limits specific to the patient and prescribed by a doctor have been determined, e.g. in a sleep laboratory, and set accordingly.

SOMNO*smart* 2 is **not** suitable for use as a life-support system.

2.2 Purpose of SOMNO*set*

SOMNO*set* is a device for efficient adjustment to CPAP patients. The device can work on a stand-alone basis or in conjunction with the remote control SOMNO*adjust* or an extended user interface of the SOMNO*support* software. The recorded data can also be visualized and evaluated with the aid of SOMNO*support*.

SOMNO*set* permits titration without the patient coming to a sleep laboratory. Titration can be carried out in the patient's familiar surroundings.

SOMNO*set* generates positive airway pressure (PAP).

SOMNO*set* may be operated as a self-regulating device. In that case SOMNO*set* recognizes respiratory events and varies the airway pressure accordingly.

While the patient is asleep, the airways are braced by the air pressure generated.

Airway pressure is administered by means of a mask.

In the Autotitration mode the device determines, during the titration night, a therapy pressure (recommended titration pressure) that largely prevents closure of the upper airways.

From the data recorded, the physician can determine the required therapy pressure. This pressure is set on the therapy device which is given to the patient for long-term therapy following titration.

SOMNO*set* can be used for people aged 12 years or more.

Important!

SOMNO*set* is **not** suitable for use as a life-support system.

2.3 Uses SOMNO*soft*+

SOMNO*soft*+ is a CPAP device for treating sleep-related respiratory disorders.

SOMNO*soft*+ generates positive airway pressure (PAP).

The softPAP mode increases patient comfort by means of a brief pressure reduction during the transition from inhalation to exhalation.

SOMNO*soft*+ recognises respiratory events. This permits efficient therapy control.

During sleeping, the patient's airways are braced by the air pressure generated.

Airway pressure is administered by means of a mask.

SOMNO*soft*+ can be used both in CPAP mode and in softPAP mode for individuals aged 12 years or more.

Important!
SOMNO*soft*+ can reliably prevent closure of the airways only if the therapy pressure specific to the patient and prescribed by a physician has been determined, e.g. in a sleep laboratory.

SOMNO*soft*+ is **not** suitable for use as a life-support system.

2.4 Function of SOMNO*smart* 2

SOMNO*smart* 2 works on the principle of an electrically powered flow generator delivering an electronically controlled constant pressure level.

A radial fan draws in ambient air through a filter and conveys it to the device outlet port. From here the air flows through the hose system and the mask to the patient.

An oscillation generator creates a slight sinusoidal pneumatic oscillation in the air flow produced by the device.

The airway and oscillation pressure is registered via the pressure measurement tube in the mask.

The current oscillation pressure reading is compared with an average value and the preceding values. This evaluation of the oscillation pressure makes it possible to identify any significant change in airway resistance and hence to increase or reduce the therapy pressure via the flow generator.

The pressure present in the mask is shown in the LC display. The microprocessor-controlled flow generator regulates the pressure at the value determined.

The device also records a respiratory flow signal that can be output to a PSG system or read off with the aid of SOMNO*support*. This makes it possible to identify apnoea, hypopnoea and respiratory flow limitations.

The exhalation system before the mask prevents accumulation of CO_2-enriched expired air in the hose system.

Auto switch-on can be activated on the SOMNO*smart* 2. The device can then be switched on by breathing into the mask. If there is no pressure for about 5 seconds (e.g. because the mask is taken off), the SOMNO*smart* 2 switches off automatically.

Following a power failure and resumption of the power supply, the status of SOMNO*smart* 2 is the same as it was before the power failure. The stored data remain preserved.

There are two functions designed to make it easier to go to sleep: (soft-)start or start pressure function.

(Soft-)start function: When this is switched on, the pressure is adjusted to the (soft-)start pressure set by the physician. The pressure limits then gradually increase to the set values. The time taken for this increase is adjustable. This function is suitable for patients who find the high pressure unpleasant while they are awake.

Additional function from software version 6.0:

Start pressure function: The pressure remains at the set value throughout the start period. At the end of the start period, the pressure is reduced to the lower pressure limit. This function is suitable for patients who find low pressure unpleasant while they are awake, or who need high pressure quickly after they have gone to sleep.

In softPAP mode the respiratory flow curve is analysed continuously to ensure timely recognition of the transition between inhalation and exhalation. Before the transition to exhalation the therapy pressure is reduced to make it easier to breathe out. The size of this pressure reduction can be set in two stages: "slight" (stage 1) and "normal" (stage 2). This increases patient comfort. Before the next inhalation phase, the pressure is raised to the therapy figure once again.

If apnoea or valid flow limitations occur while the patient is sleeping, the softPAP mode is automatically deactivated for the relevant period. If the respiratory frequency is too high, the softPAP mode is also temporarily deactivated. However, the therapy pressure remains reduced during this period.

In full face mode the device supports therapy with a full face mask. The event-related pressure adjustment is modified accordingly.

2.5 Function of SOMNO*set*

SOMNO*set* works on the principle of an electrically powered flow generator delivering an electronically controlled constant pressure level.

A radial fan draws in ambient air through a filter and conveys it to the device outlet port. From here the air flows through the hose system and the mask to the patient.

An oscillation generator creates a slight sinusoidal pneumatic oscillation in the air flow produced by the device.

The airway and oscillation pressure is registered via the pressure measurement tube in the hose system.

The current oscillation pressure reading is compared with an average value and the preceding values. This evaluation of the oscillation pressure makes it possible to identify any significant change in airway resistance and hence to increase or reduce the therapy pressure via the flow generator.

The pressure present in the mask is shown in the LC display. The microprocessor-controlled flow generator regulates the pressure at the value determined.

The values determined are recorded. In Autotitration mode, the recommended therapy pressure is calculated at the end of the titration night.

The device also records a respiratory flow signal that can be output to a PSG system or read off with the aid of SOMNO*support*. This makes it possible to identify apnoea, hypopnoea and respiratory flow limitations.

The exhalation system before the mask prevents accumulation of CO_2-enriched expired air in the hose system.

To make it easier for the patient to go to sleep, an automatic Softstart system is incorporated for the APAP and CPAP modes. When this is switched on, the pressure is reduced to the Softstart pressure set by the physician. The therapy pressure then gradually increases to the set value. The period for the pressure rise can be set in 5-minute steps between 0 and 30 minutes. The automatic Softstart system can be locked out by the physician.

Auto switch-on can be activated in APAP and CPAP modes. The device can then be switched on by breathing into the mask. If there is no pressure for about 5 seconds (e.g. because the mask is taken off), the SOMNO*set* switches off automatically.

If the power supply is interrupted and then restored, data recording starts afresh in all modes. In that case, pressure adjustment and event evaluation restart in the Autotitration and APAP modes. In the Pressure Profile and CPAP modes, titration or therapy are continued in the status that was active before the interruption. The stored data remain recorded despite the interruption.

2.6 Functional description of SOMNO*soft*+

SOMNO*soft*+ works on the principle of an electrically powered flow generator delivering an electronically controlled constant pressure level.

A radial fan draws in ambient air through a filter and conveys it to the device outlet port. From here the air flows through the hose system and mask to the patient.

The airway pressure is registered via the pressure measurement tube in the mask.

The pressure present in the mask is shown in the LC display. The microprocessor-controlled flow generator regulates the pressure at the set value.

In softPAP mode the respiratory flow curve is analysed continuously to ensure timely recognition of the transition between inhalation and exhalation. Before the transition to exhalation the therapy pressure is reduced to make it easier to breathe out. The size of this pressure reduction can be set in two stages: "slight" (stage 1) and "normal" (stage 2). This increases patient comfort. Before the next inhalation phase, the pressure is raised to the therapy figure once again.

If apnoea or valid flow limitations occur while the patient is sleeping, the softPAP mode is automatically deactivated for the relevant period. If the respiratory frequency is too high, the softPAP mode is also temporarily deactivated. However, the therapy pressure remains reduced during this period.

The device also records a respiratory flow signal that can be output to a PSG system or read off with the aid of SOMNO*support*. SOMNO*soft*+ recognises apnoea, hypopnoea and respiratory flow limitations. This permits efficient therapy control.

The exhalation system in front of the mask prevents accumulation of CO2-enriched expired air in the tube system.

An automatic Softstart system is provided to enable the patient to go to sleep more easily. When this is switched on, the pressure is reduced to the Softstart pressure set by the physician. The therapy pressure then gradually increases to the set value. The period for the pressure rise can be set in 5-minute steps between 0 and 30 minutes. The automatic Softstart system can be locked out by the physician.

Auto switch-on can be activated on the SOMNO*soft*+ The device can then be switched on by breathing into the mask. If there is no pressure for about 5 seconds (e.g. because the mask is taken off), SOMNO*soft*+ switches off automatically.

Following a power failure and resumption of the power supply, the status of SOMNO*soft*+ is the same as it was before the power failure. The stored data remain preserved.

3. Servicing

3.1 Intervals

The two filters **45** and **46** need to be checked regularly for soiling.

- Coarse dust filter **45** must be changed every 6 months.
- Fine filter **46** must be changed at least every 250 operating hours.
- The pressure measurement tube **11** must be changed at least every 6 months – and more frequently if soiling is heavy.

For hygiene reasons we recommend:

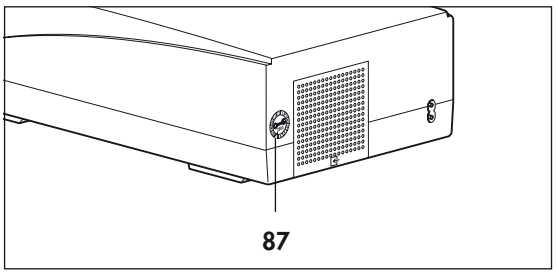
- replacing the complete mask system every 6 to 12 months depending on soiling, and
- replacing the expiration system in accordance with the relevant operating instructions.

See the section on "Cleaning" in the relevant operating instructions.

The following preventive maintenance measures must also be carried out:

1. Service after every 5000 operating hours (service symbol **23** appears in display and must be reset after every service).
2. Service after a maximum of 2 years (see service label on back of device).
3. The parts exposed to the air flow must be cleaned every 10,000 hours or 4 years.
4. Every 2 years the battery on the Smartboard or Softboard must be replaced.

After every service, replace the service label **87** with one bearing the new data (see "9. Spare parts" on page 46). Use a hole punch or nail scissors (V-shaped notch) to mark the month. Affix the new service label to the left of the filter cover.

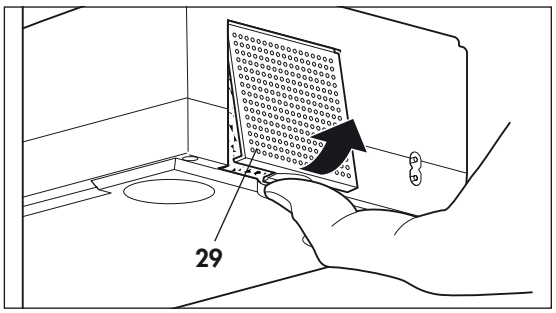


3.2 Filter change

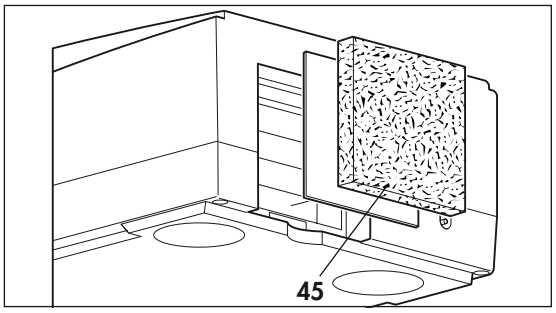
3.2.1 Coarse dust filter

1. To ensure that no water runs into the device **1** when changing the filters, disconnect the humidifier **35** from the device. Also observe the operating instructions supplied.
2. Slightly raise the rear of the device or push the back of the device off the edge of the table a little, so that you can reach under the filter cover **29**.

3. Press with your thumb on the underside of the filter cover **29** and lift the cover off.
4. Pull out the coarse dust filter **45** with your finger.
5. You can wash a soiled coarse dust filter in clean water and reuse it after drying thoroughly.



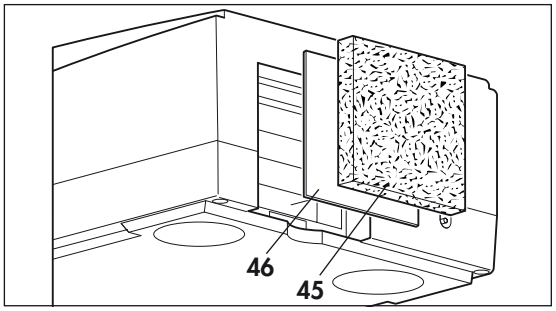
6. Insert the clean coarse dust filter **45**.
7. Insert the filter cover **29** in the opening in the housing with its upper edge first.
8. Using a finger to press in the catch on the underside of the cover, fit the cover so that it clicks into place.
9. If appropriate, fit the humidifier. Observe the section "3.4 Humidifier" in the operating instructions.



3.2.2 Fine filter

1. Remove the coarse dust filter **45** as described under "3.2.1 Coarse dust filter".
2. Remove the fine filter **46**.

The fine filter must be changed if it has turned dark grey, and in any case after 250 operating hours. In the latter case the filter change symbol appears.



3. Insert the **new** filter and filter cover **29** in reverse order.
4. To clear the filter change symbol, hold down the on/off button **24** when switching on the device until the symbol disappears from the display.

If the fine filter is changed because of soiling **before 250 operating hours are reached**, the **hour counter must be reset to zero**:

5. To do so, hold down the On/Off button **24** when switching on the device. After about 3 seconds the filter change symbol lights up and after another 3 seconds it disappears. Now you can release the button.

3.3 Cleaning the device

The parts exposed to the air flow must be cleaned and disinfected every 10,000 hours or every 4 years. This must be done as described in Chapter "4.3 Cleaning and disinfecting on change of patient" on page 13.

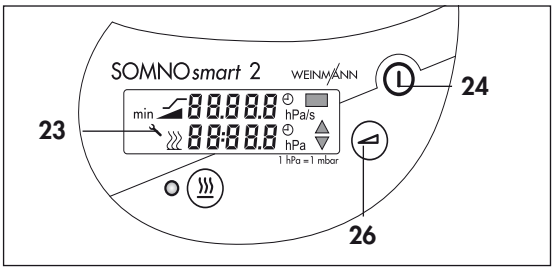
After every service a test must be performed in accordance with Chapter "5. Test the device" on page 15.

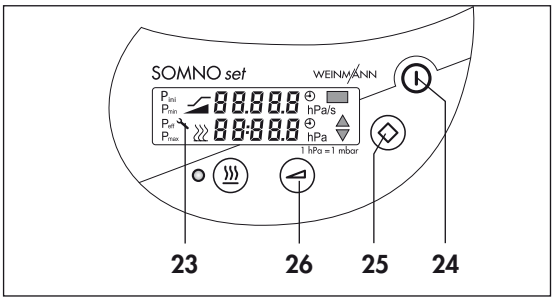
3.4 Resetting the service symbol

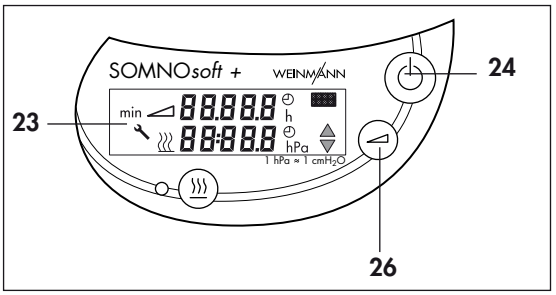
After every service/repair the service hours counter must be reset to "0", and the service symbol **23** in the display must be cleared. A new service label (current year + 2 years) must also be affixed to the back of the device.

1. To reset the service hours counter to "0" or to switch off the service symbol, hold down the Softstart button **26** with the device switched off until AD/A1 or SoftD/Soft1/Soft2 appears in the display.
2. Now press the On/Off button **24** as well until an **5** (for "service key") appears.
3. Now release both buttons.

4. Briefly pressing the On/Off button **24** clears the service key. If you want set the service symbol again, press the On/Off button **24** again.







3.5 Disposal

Do not dispose of the device with domestic waste. To dispose of the device properly, please contact a licensed, certified electronic scrap disposal merchant. This address is available from your Environment Officer or from your local authority.

4. Hygienic preparation

4.1 Cleaning and disinfecting after use

Caution!

This point is described in Chapter 5 "Cleaning and Disinfection" of the SOMNO*smart* 2, SOMNO*set* or SOMNO*soft*+ operating instructions.

Hygienic preparation of the device after repairs and for a new patient is described below.

4.2 Cleaning and disinfection after repair

In the event of repairs the following work should be performed by the qualified dealer.

Caution!
Be sure to follow the disinfectant manufacturer's instructions (8.3, page 45). You are recommended to wear suitable gloves (e.g. household or disposable gloves) during disinfection procedures.

- Wipe outside of device and power cord with TERRALIN disinfectant.
- Clean hoses, cap and mask as described in the operating instructions or replace with new parts (depending on condition).
- Open device as described in 7.2.
- Replace the coarse dust filter and fine filter **45** + **46** as described in Chapter 3.2.
- Clean the inside of the device and filter housing with a vacuum cleaner. Thoroughly clean any specially dirty parts.
- Close device as described in 7.3.

4.3 Cleaning and disinfecting on change of patient

When making the device hygienic for a new patient, the following steps must be carried out:

Caution!

Be sure to follow the disinfectant manufacturer's instructions (8.3, page 45). You are recommended to wear suitable gloves (e.g. household or disposable gloves) during disinfection procedures.

- Wipe outside of device and power cord with TERRALIN disinfectant. Dispose of hose and mask system and carrying bag, and replace with new parts.
- Open device as described in Chapter 7.2.
- Clean the inside of the device and filter housing with a vacuum cleaner. Thoroughly clean any specially dirty parts.
- Replace the coarse dust filter and fine filter **45** + **46** as described in Chapter 3.2.
- Spray-disinfect device outlet **7**, filter holder **44** and filter cover **29 twice** with "MIKROZID LIQUID", taking care to wait for the prescribed disinfection time in each case. At the beginning of the disinfection time, also wipe the accessible surfaces with a cloth moistened with "MICROZID LIQUID".
  Caution!
  No disinfectant residues must be left in the pressure measurement stub of the device outlet port **7**; if necessary the pressure measurement stub must be blown dry.
- Replace OPS delivery tube **61** (only SOMNO*smart* 2 and SOMNO*set*).

- Open box **62**/**63** as described in Chapter 7.14.
- Replace both labyrinths **64** and **66**, motor frame **65**, box damper insert **69** and cover damper insert **68**. Remove fan cap from fan.
- Spray-disinfect the box, fan and fan cap **twice** with "MIKROZID LIQUID", taking care to wait for the prescribed disinfection time in each case. At the beginning of the disinfection time, also wipe the accessible surfaces with a cloth moistened with "MICROZID LIQUID".
- Spray-disinfect fan blade **twice** with "MIKROZID LIQUID". The fan blades must not be exposed to any mechanical forces.
- Dip-disinfect connecting tube **59** mit "GIGASEPT FF".
- Close box **62**/**63** again as described in Chapter 7.14.
- Alternatively, box **62**/**63** can be replaced by an exchange box (see "7.13 Replacing Smartbox/Comfortbox" on page 35).
- Close appliance as described in Chapter 7.3. Wipe housing and power cord with TERRALIN disinfectant.
- Set service symbol and clear it again, to reset the service hours counter to "0" (see "3.4 Resetting the service symbol" on page 12).
- Test the device.
- Use SOMNO*support* to clear the patient data stored in the device. Observe the relevant operating instructions.

4.4 Cleaning and disinfecting the SOMNO*click*/SOMNO*click* 300 after use

This point is described in Chapter 4 "Cleaning and Disinfection" of the SOMNO*click* or SOMNO*click* 300 operating instructions.

4.5 Cleaning and disinfecting the SOMNO*click*/SOMNO*click* 300 on change of patient

When making the device hygienic for a new patient, the following steps must be carried out:

- For hygiene reasons we recommend replacing the plastic parts after a maximum of 2 years' use. The spare parts list can be found in the SOMNO*click*/SOMNO*click* 300 operating instructions (WM 16719).
- If plastic parts and heating element are badly soiled or covered with lime scale, offer the customer a new device, otherwise: Proceed as described in Chapter "4. Hygienic preparation" of the SOMNO*click*/ SOMNO*click* 300 operating instructions (WM 16719).

5. Test the device

5.1 General

Important
A test is required after every service or repair.

Please enter the following figures in your service record sheet (see Page 53):

For SOMNO*smart* 2: operating hours, humidifier level, Softstart time and Softstart initial pressure, and the patient's pressure limits and pressure rise rate as shown in the patient pass.

For SOMNO*set*: operating hours, humidifier level, Softstart time and Softstart initial pressure, and the patient's pressure limits and pressure rise rate as shown in the patient pass, and also the mode.

For SOMNO*soft*+: operating hours, humidifier level, Softstart time and Softstart initial pressure, CPAP pressure and mode.

If the test reveals faults or deviations from the specified values, the device must not be used again until the faults are rectified.

To find out what may be causing the faults and how to remedy the malfunction, see Chapter „6. Troubleshooting" on page 20.

5.2 Performing the check

5.2.1 Checking the power cord

1. Check the power cord **3**.

   Make sure that

   – the insulation is sound,
   – the cable is undamaged,
   – there are no loose connections.

2. If necessary, change the power cord **3**.

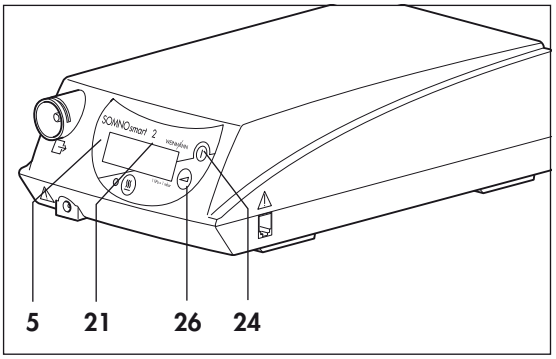
5.2.2 Checking the housing

Check the general condition of the housing.

– If the housing is damaged or faulty, replace the relevant side of the device (see „7.15 Replacing lower part of housing" on page 41 or „7.16 Replacing upper part of housing" on page 42).

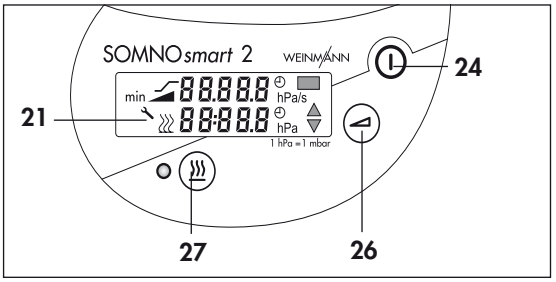
5.2.3 Checking display

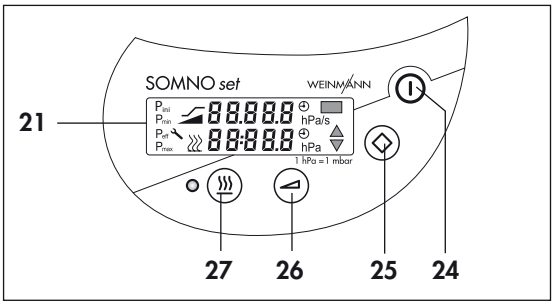
1. Check that the fascia film of the control panel **5** is flat all over and firmly in place. If it is not, replace the fascia film (see "7.5 Replacing the fascia film" on page 26).
2. Now fix up the power supply by connecting one end of the power cord **3** to the device and the other to the wall socket.
3. Press the On/Off button **24**. The LC display **21** appears.
4. Briefly open and close the device outlet port. The LC display changes.
5. Switch off the device with button **24**. The day's therapy duration appears briefly in the LC display **21**. Then only "0" is left showing on the LC display **21**.



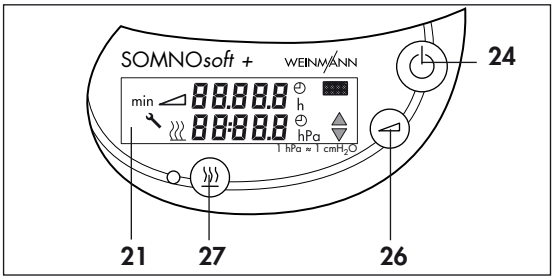
5.2.4 Checking pressure and button functions

1. Assemble the device ready for use with hose system **12**, mask **14** and power cord **3** attached.
   Note:
   If the SOMNO*set* is in Autotitration or Pressure Profile mode, switch to APAP or CPAP.
2. With the device switched off, press the Softstart button **26** repeatedly until the current auto switch-on setting (A0 or A1) appears in the display.
   Note:
   if the exhalation relief setting (SoFt0/SoFt1/SoFt2) appears in the display, first press the humidifier button **27** to switch to the auto switch-on setting.
3. If necessary, press the On/Off button **24** to change the setting to A1.
   – The device will now be switched on automatically as soon as breathing through the mask starts (pressure > 0.5 hPa),
   – When the mask is removed, the device must switch off after 5 seconds.

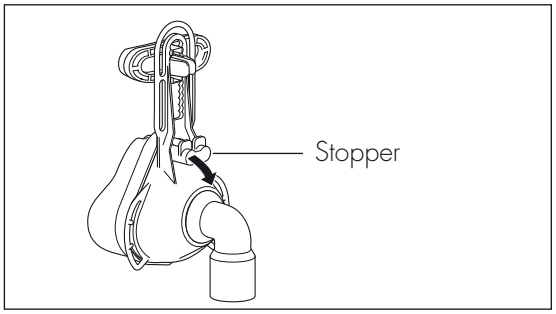




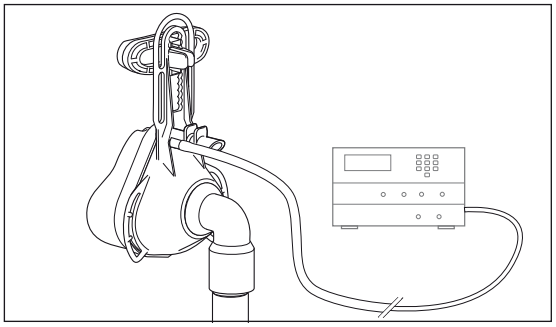
4. The day's therapy duration appears briefly in the LC display **21**. After that, only "0" is left showing on the LC display **21**.
5. Press the On/Off button **24** to switch the device on. For 3 seconds the display shows the total use time **17**.
6. Close the opening of the mask, e.g. with your thumb or hand, and hold it closed.



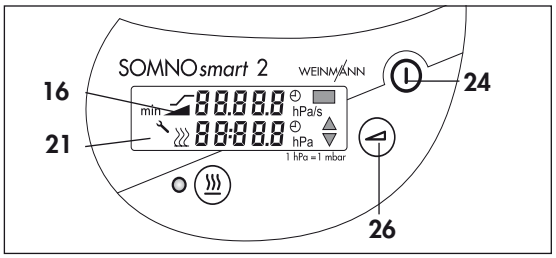
7. If Softstart is switched on, switch it off by pressing button **26**. The radial fan delivers air through the hose system to the mask, and the current pressure in hPa is shown in the LC display **21**.
8. Compare the pressure shown in the LC display **21** with the prescribed minimum pressure limit. After approx. 1 minute the difference must be not more than ± 0.2 hPa.
9. Use a pressure gauge to check the set pressure at the connection stub of the mask.
   – To do so, remove one stopper.



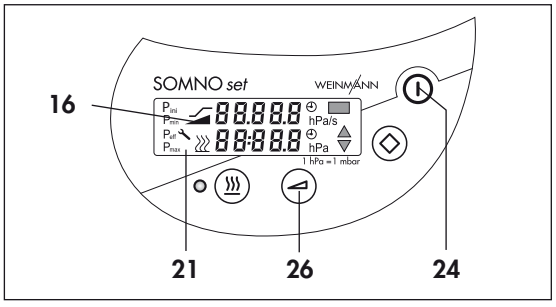
   – Connect a pressure gauge to the open connection stub.
   Compare the reading with the figure shown on the LC display **21**. After approx. 1 minute the difference must be not more than ± 0.4 hPa.

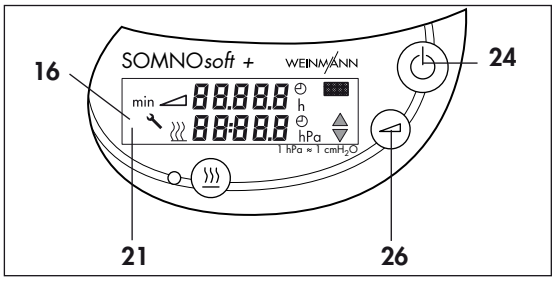


10. Press button **26** to switch on Softstart. The Softstart symbol **16** appears and the LC display **21** shows the Softstart time. At the same time the pressure is reduced to the initial Softstart pressure.



   The Softstart function can be locked out by the physician. In that case the Softstart initial pressure shown in the display is "– –".





5.2.5 Checking OP signal (SOMNO*smart* 2 and SOMNO*set*)

Measuring equipment required:

- ESD workplace,
- Multimeter,
- PSG connecting cable, WM 23976,
- Operating instructions for PSG connecting cable, WM 16250.

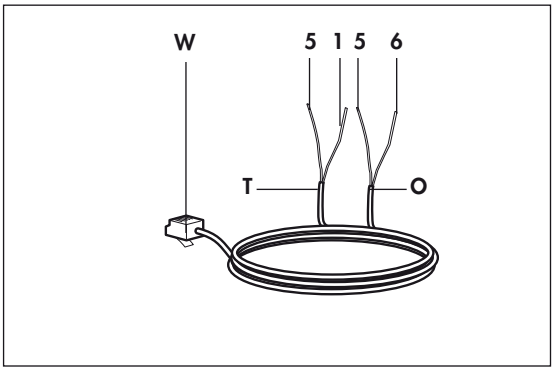
Important

Auto switch-on must be deactivated.

1. Use SOMNO*support* to assign the OP signal to channel 1.
2. Insert the Western plug W of the PSG connecting cable in port **4** of the device.
3. Connect the pair of wires marked **O** to the multimeter. The insulated wire **6** is the plus pole for the oscilatory pressure (OP), the bare wires **5** are the earth.
4. Select a suitable measuring range on the multimeter, e.g. 0 – 2 V DC.
5. Switch on the device at the On/Off switch **24**.
6. With the mask open, the voltage measured must be ≤ 0.3 V DC.

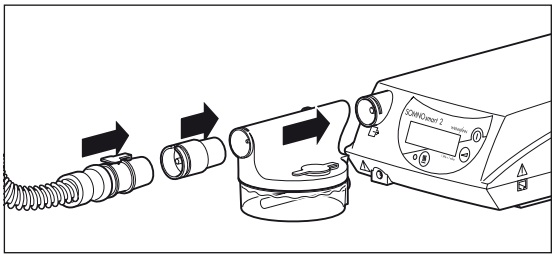
   With the mask closed (use your hand to hold it closed), the voltage measured must be ≥ 0.4 V DC.

   If no OP signal can be measured, remove the battery from the device (see "7.9 Replacing battery on Smartboard or Softboard" on page 31) for a few minutes, then put it back. Perform the measurement again. If there is still no measurable OPS, the Smartboard must be replaced.
7. Switch off the device at the On/Off switch **24**.



5.2.6 Checking function of humidifier

1. Make a visual inspection of the plastic housing:
   If there are any cracks/damage or heavy soiling, the plastic parts or seals must be replaced.
2. Fill the humidifier up to the mark with water.
3. Check that the humidifier is not leaking.
4. Pour the water out.
5. Now pour in 50 ml water.
6. Click-fit the humidifier to the therapy device.
7. Insert the red drying adapter (supplied with the therapy unit) in the outlet connection stub of the humidifier.
8. Push the hose system onto the drying adapter.
9. Switch on the therapy appliance.
10. Switch on the humidifier by pressing the Humidifier button ♨ on the therapy device.
11. Select heating level 6 on the therapy device.
12. Check that the humidifier is heating up.
13. Remove the hose system by pressing the adapter release catch.
14. Remove the red drying adapter from the humidifier by twisting it slightly.



If servicing was completed successfully, reset the service symbol (see "3.4 Resetting the service symbol" on page 12).

6. Troubleshooting

Fault	Cause	Rectifying faults
No running noise, "Standby" and "Operating" indicators do not come on.	No power supply.	Check connection between power cord and device or socket. Check power supply with a different device (e.g. lamp). If necessary, replace power cord.
	Fuse has blown.	Replace fuse (Chapter 7.6, page 26).
	Transformer defective.	Replace transformer (Chapter 7.10, page 31).
	Display board defective	Replace displayboard (Chapter 7.4, page 25).
	Smartboard or Softboard faulty.	Replace Smartboard or Softboard (Chapter 7.8, page 30).
	Powerboard defective.	Replace Powerboard (Chapter 7.7, page 27). Send defective Powerboard to manufacturer for fault analysis.
No running noise after "Operating" indicator comes on.	Motor not turning.	Replace Powerboard (Chapter 7.7, page 27). Send defective Powerboard to manufacturer for fault analysis.
		Replace fan (Chapter 7.14, page 36).
	Transformer defective.	Replace transformer (Chapter 7.10, page 31).
	Fuse has blown.	Replace fuse (Chapter 7.6, page 26).
Faulty display or none at all.	Display defective.	Replace displayboard (Chapter 7.4, page 25).
Tolerance of therapy pressure is >0.4 hPa after 1 minute.	Smartboard or Softboard faulty.	Replace Smartboard or Softboard (Chapter 7.8, page 30).
Device **cannot** be switched on by breathing into mask in Automatic mode.	Automatic mode not active.	Activate auto switch-on (see 4.1. of operating instructions).
	SOMNO*set* only: Autotitration or Pressure Profile mode active.	Auto switch-on is not available in these modes. (See "Supplementary Operating Instructions for Medical Staff SOMNO*set*").
	Powerboard defective	Replace Powerboard (Chapter 7.7, page 27).
	Smartboard or Softboard faulty.	Replace Smartboard or Softboard (Chapter 7.8, page 30).
Device runs, but does not reach lower pressure limit.	Filters soiled.	Change both filters (Chapter 3.2, page 10).
	Leak in mask.	Adjust cap and/or headstraps so that mask is a firm fit.
Device does not switch off 5 seconds after mask is removed.	Auto switch-on mode not activated	Activate auto switch-on (see section 4.1 of operating instructions).
	SOMNO*set* only: Autotitration or Pressure Profile mode active.	Auto switch-on is not available in these modes. (See "Supplementary Operating Instructions for Medical Staff SOMNO*set*").
Filter change indicator comes on.	Filters soiled.	Clean or change both filters (Chapter 3.2, page 10).
Service symbol comes on		Have device serviced as soon as possible by Weinmann or an authorized dealer.
Error message "Err b" in display	Battery on Smartboard/ Softboard run down, Internal clock data not plausible	Replace battery on Smartboard/Softboard (Chapter 7.9, page 31) and reset date/time.
	Internal clock data not plausible	Replace Smartboard/Softboard (Chapter 7.8, page 30) and reset date/time.

Error message "Err d" in display	Data stored in E^2Prom incorrect (e.g. compliance counter, operating hours counter), therapy data are correct	Replace Smartboard or Softboard (Chapter 7.8, page 30) and reset date/time.
Error message "Err P" in display	Oscillation pump defective	Check microphone, replace if necessary.
		Replace oscillation pump.
		Replace Smartboard or Softboard (Chapter 7.8, page 30).
Error message "Err c" in display	Pressure sensor not calibrated or incorrectly calibrated	Replace Smartboard or Softboard (Chapter 7.8, page 30).
Error message "Err S" in display	Fan not running	Check fuses and replace if necessary (Chapter 7.6, page 26).
		Replace Powerboard (Chapter 7.7, page 27).
		Replace Smartboard or Softboard (Chapter 7.8, page 30).
		Replace fan (Chapter 7.14, page 36).
		Check continuity of pressure measurement zone.
Error message "Err E" in display	Therapy data stored in E^2Prom (e.g. pressures, pressure calibration) are incorrect	Replace Smartboard or Softboard (Chapter 7.8, page 30) and reset date/time.
Water in humidifier does not heat up.	Humidifier defective.	Test with different humidifier. If device defective, send humidifier to manufacturer.
	Powerboard defective.	Replace Powerboard (Chapter 7.7, page 27). Send defective Powerboard to manufacturer for fault analysis.
Power cord damaged		Replace power cord.
Device will not switch on via membrane keyboard	Ribbon cable for membrane keyboard has slipped out of connection.	Check whether ribbon cable is correctly connected to Displayboard.
	Fascia film defective	Replace fascia film (Chapter 7.5, page 26).

7. Repair Information and Instructions

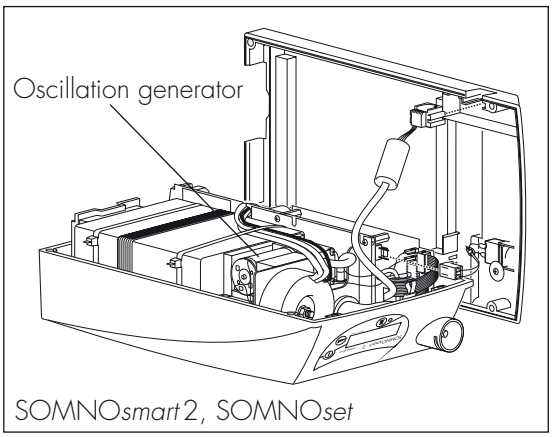
7.1 General

Always perform repairs to SOMNO*smart* 2, SOMNO*set* and SOMNO*soft*+ at an ESD workplace.

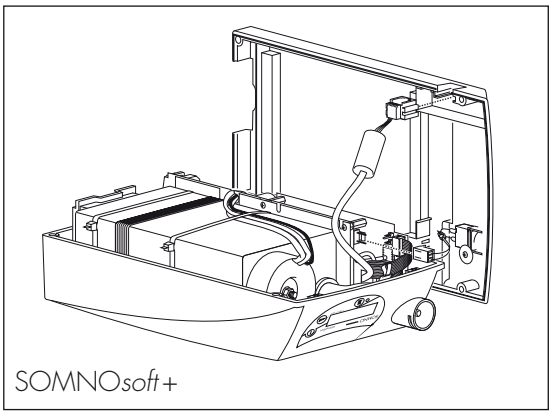
- **Observe the safety information in the operating instructions for SOMNO*smart* 2, SOMNO*set* and SOMNO*soft*+.**
- All operations on this device require detailed knowledge and observation of the Operating Instructions and the Service and Repair Instructions.
- Do not carry out any repairs that are not described in these Service and Repair Instructions. This is the only way to guarantee trouble-free functioning of SOMNO*smart* 2, SOMNO*set* and SOMNO*soft*+.
- Make sure that your hands and workplace are clean during the repair work.
- Be sure to carry out a test after **every** repair (see "5. Test the device" on page 15).
- If you replace components or individual parts, use only genuine Weinmann parts.
- When ordering the lower part of the housing **42**, please specify device type, year of manufacture and device number.

Note:
The item numbers quoted in the following text are identical to the item numbers in the spare parts list on Page 46 and the overview on Page 4.

Important!
These service and repair instructions are for the devices SOMNO*smart* 2, SOMNO*set* and SOMNO*soft*+. In most cases the description is the same for all three devices. If this is not the case, the text draws attention to the fact. The illustrations usually show the maximum equipment level, with oscillation generator, microphone and the relevant cables. Please note that SOMNO*soft*+ does **not** have these components.



SOMNO*smart* 2, SOMNO*set*


SOMNO*soft*+

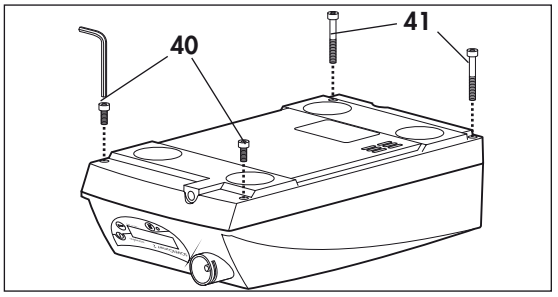
7.2 Opening the device

Tools and equipment required:

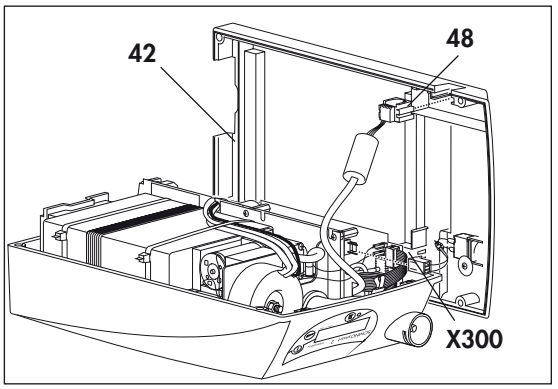
- Allen key 3 mm,
- ESD workplace.

Caution!
Always pull out the mains plug before opening the device.

1. Place the device upside down on a non-slip surface.
2. Slacken and remove the 2 screws **40** and the 2 screws **41**.

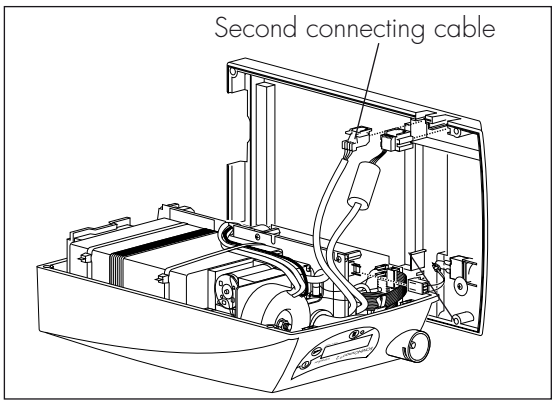


3. Hinge the lower part of the housing **42** away to the side.
4. Pull the Western port of the connecting cable **48** out of the housing base **42**.
5. Disconnect plug **X300** from the board.
6. Now you can put the lower part of the housing **42** on one side.



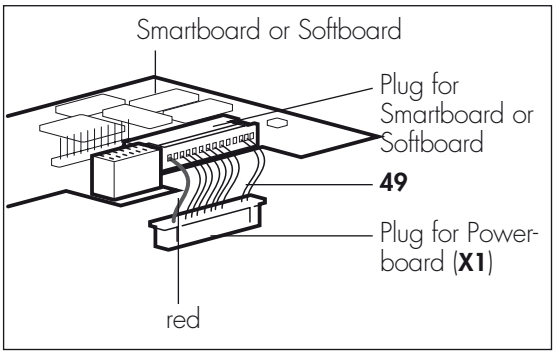
Caution!
On older devices there is a second connecting cable:
SOMNO*smart* 2 up to device number 7256
SOMNO*set* up to device number 1112
SOMNO*soft*+ up to device number 1264

7. Remove the Western socket from the base of the device.



If the second connecting cable is damaged, proceed as follows:

1. Replace the connecting cable with connecting cable **49**.
2. Replace the base of the device (see "7.15 Replacing lower part of housing" on page 41).



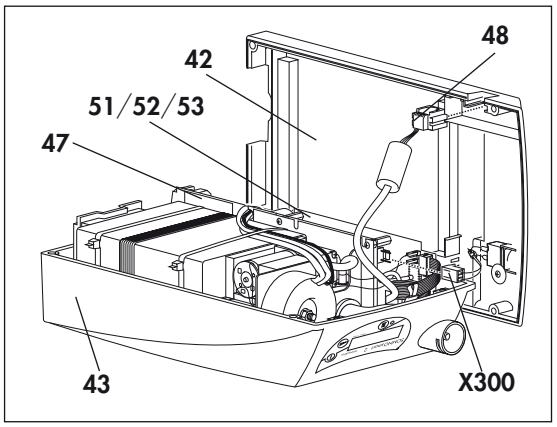
7.3 Closing the device

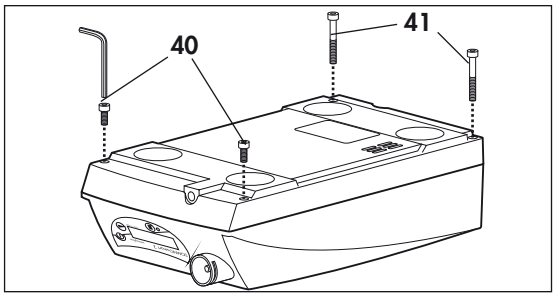
Tools and equipment required:

- Allen key 3 mm,
- ESD workplace.

1. Hold the lower part of the housing **42** against the upper part **43**.
2. Push connector **X300** onto the Powerboard **47**. The lug on the connector must be facing the catch.
3. Push the Western port of the connecting cable **48** into the guides in the lower part of the housing **42**.
4. Check that all tubes and cables are firmly connected. If necessary, push them **carefully** right onto the stubs (tubes) or auf die connection points (cables).
5. Align the Powerboard **47** and Smartboard **51**/**52** or Softboard **53** in the guides inside the device.
6. Place the lower part of the housing **42** on the upper part **43**.

   Make sure that the Powerboard 47 is correctly fitted and that the connecting cable 48 is not trapped.
7. Now screw the upper part of the housing tight using the 2 screws **40** and 2 screws **41**.
8. Finally, turn the device the right way up.





7.4 Replace Displayboard

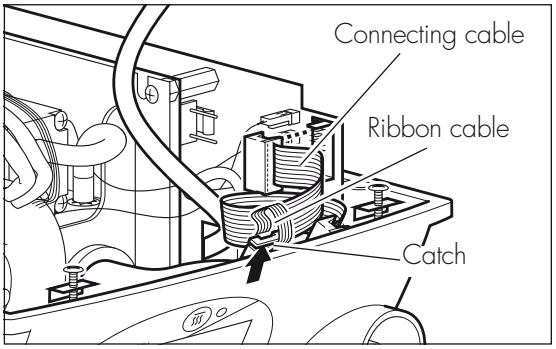
Tools and equipment required:

- Allen key 3 mm,
- ESD workplace,
- Phillips screwdriver size 1.

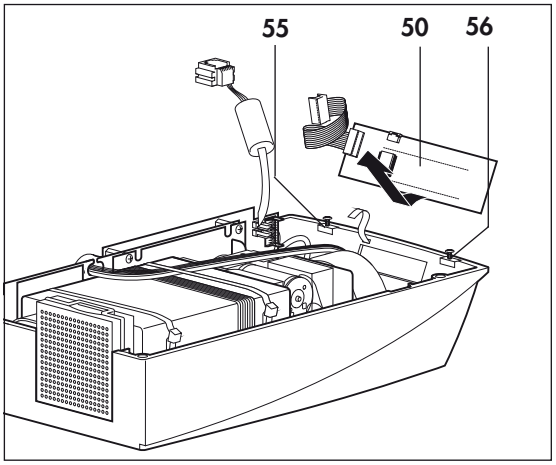
1. Open the device (see "7.2 Opening the device" on page 23).
2. Pull the connecting cable off the Smartboard/ Softboard.
3. Detach the ribbon cable for the fascia film: **To do so, pull the catch upwards.** Then you can lift out the ribbon cable.

   Caution:

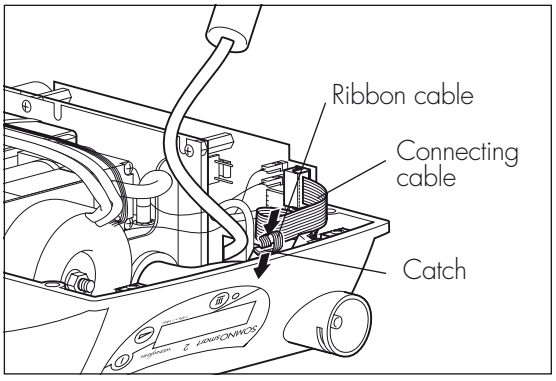
   If the catch is not opened correctly, the ribbon cable will be damaged when pulling it out.



4. Slacken the two screws **55** slightly.
5. Remove the Displayboard **50** by pushing it upwards against the clamp plates **56**, removing it at the bottom from the holder in the housing, and then lifting it out.



6. Insert a new Displayboard **50**: First push the Displayboard under the clamp plates **56**, then place it in the holder in the housing.
7. Align the clamp plates **56** and screw them tight with screws **55**.
8. Reconnect the ribbon cable for the fascia film to the Displayboard.
   - Pull the catch upwards.
   - Push the ribbon cable into the connection.
   - Press the catch down again.
9. Push the connecting cable for the Displayboard onto the appropriate connector on the Smartboard/Softboard.
10. Close the device (see "7.3 Closing the device" on page 24).
11. Perform a test (see "5. Test the device" on page 15).

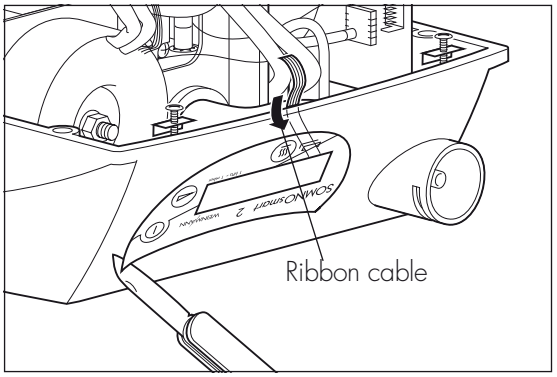


7.5 Replacing the fascia film

Tools and equipment required:

- Allen key 3 mm,
- ESD workplace,
- Phillips screwdriver size 1,
- Knife with smooth, flat blade.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Remove the Displayboard (see "7.4 Replace Displayboard" on page 25, steps **3.** to **5.**).
3. Detach fascia film with a knife blade and pull off carefully.
   Degrease this area of the housing with a little 70%-strength isopropanol.
4. Remove the protective film from the inside of the new fascia film and stick the fascia film **37**/**38**/**39** to the appropriate part of the housing. Take care when inserting the ribbon cable through the opening in the housing; it must be properly routed without any kinks.
5. Using your finger nail, carefully remove the outer protective flim from the new fascia film.
6. Fit the Displayboard (see "7.4 Replace Displayboard", steps **6.** to **8.**).
7. Close the device (see "7.3 Closing the device" on page 24).
8. Perform a test (see "5. Test the device" on page 15).



7.6 Changing fuses on the Powerboard

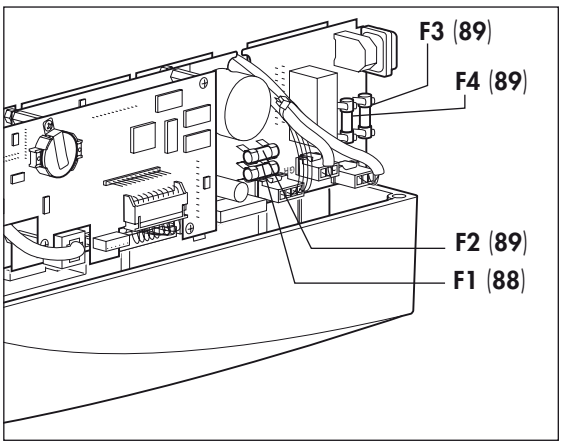
Tools and equipment required:

- Allen key 3 mm,
- ESD workplace.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Carefully lift the Powerboard **47** and Smartboard **51**/**52** or Softboard **53** slightly.

3. Check whether one of the fuses **F1** (**88**), **F2** (**89**), **F3** (**89**) or **F4** (**89**) has blown.
4. Remove the faulty fuse and replace it with a new one. Fuses **F3** (**89**) and **F4** (**89**) must always be changed at the same time.

   Caution:
   Fuses **88** (**F1**) and **89** (**F2**, **F3**, **F4**) have different current ratings! Take care to use the right rating.
5. Carefully press Powerboard **47** and Smartboard **51**/**52** or Softboard **53** back into the groove in the housing.
6. Close the device (see "7.3 Closing the device" on page 24).
7. Perform a test (see "5. Test the device" on page 15).

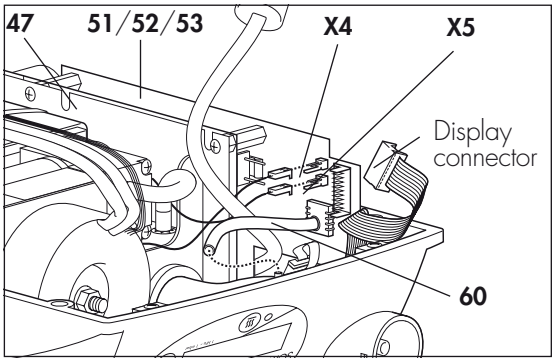


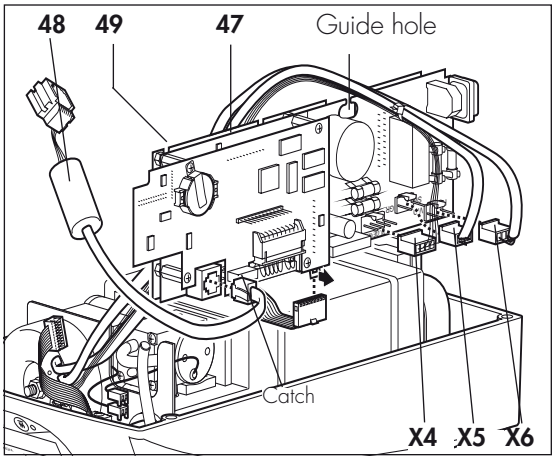
7.7 Replacing the Powerboard

Tools and equipment required:

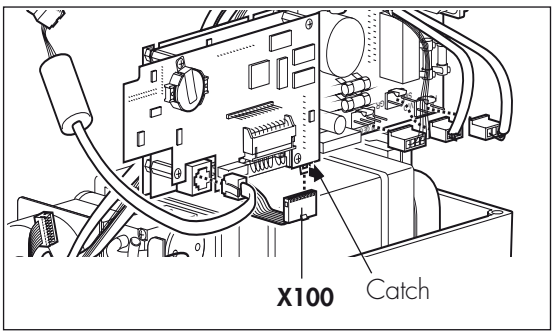
- Allen key 3 mm
- Philips screwdriver
- ESD workplace.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Pull the display plug off the Smartboard/ Softboard.
3. **Does not apply to SOMNO*soft*+:**
   Detach plugs **X5** and **X4** from Smartboard **51**/**52**.
4. Detach the pressure measurement tube **60** from the stub at the device outlet port.
5. Carefully lift Powerboard **47** and Smartboard **51**/**52** or Softboard **53** from inside the device.
6. Press the catch and remove the connector of the connecting cable **48** from the Powerboard.
7. Pull plugs **X6**, **X5** and **X4** off the power board **47**.
8. Carefully pull the three cables out through the guide hole in the Powerboard.

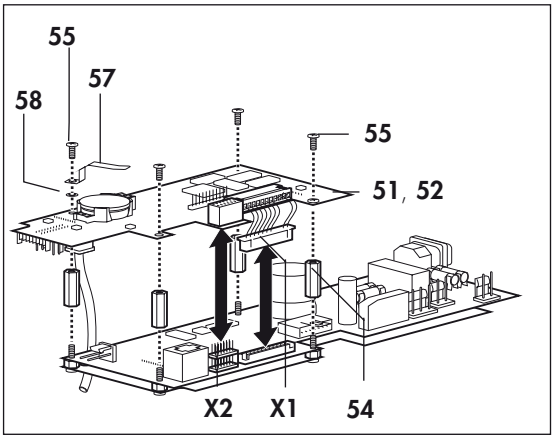




9. Undo the connector catch and carefully pull out plug **X100**.
10. Remove the defective Powerboard **47** together with Smartboard **51**/**52** or Softboard **53** from the device.



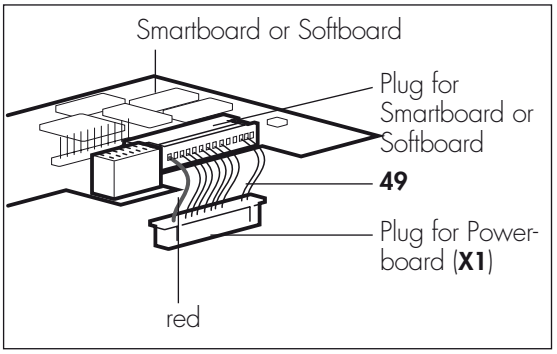
11. Loosen the screws **55** on the battery holder and remove the spring **57** and the sealing washer **58** from the Smartboard.
12. Undo the other 3 screws **55**.
13. Carefully detach Smartboard **51**/**52** or Softboard **53** from the Powerboard.
14. Disconnect plug **X1** of the connecting cable **49** from the Powerboard. Smartboard/Softboard and Powerboard are now completely separated



Caution:

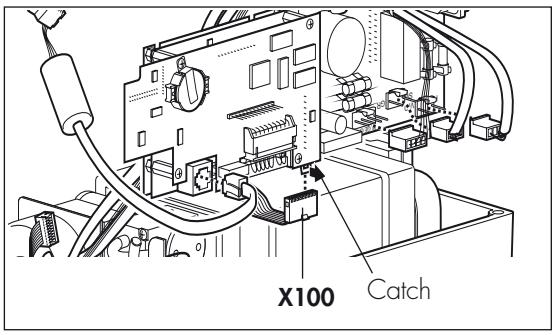
Make sure you do not confuse the two plugs for the connecting cable **49**.

15. Unscrew the distance pieces **54** from the defective Powerboard.
16. Place plug **X1** of the connecting cable **49** firmly on the new Powerboard.



17. Carefully place Smartboard **51**/**52** or Softboard **53** on the new Powerboard so that plug **X2** of the Powerboard fits into the corresponding coupling on the Smartboard (see double arrow in diagram).
18. Place the spring **57** and the sealing washer **58** on the battery holder on the Smartboard/ Softboard and fix the two parts with a screw **55**.
19. Fasten the Smartboard **51**/**52** or Softboard **53** to the Powerboard with the remaining 3 screws **55**.
20. Now insert the Powerboard **47** together with the Smartboard/Softboard in the device as described in the following steps.

21. Run the cable of plug **X100** under the Powerboard **47** and insert the plug in the appropriate connection.

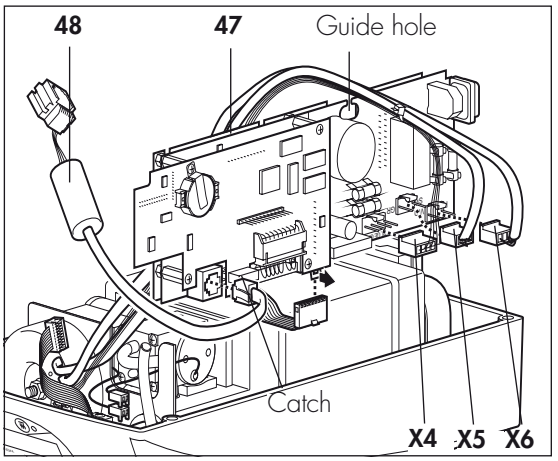


22. Push plug of connecting cable **48** onto the Powerboard.
23. Carefully thread the three cable harnesses for **X4**, **X5** and **X6** into the guide hole of the Powerboard.
24. Connect the transformer plugs **X4**, **X5** and **X6** to the Powerboard.

    Caution!
    Do not under any circumstances confuse plugs X4 and X5. The plugs can be distinguished by the colours of the wires:

    X4: black and grey wires ("SW" + "GR"),
    X5: violet and red wires ("VIO" + "RT").

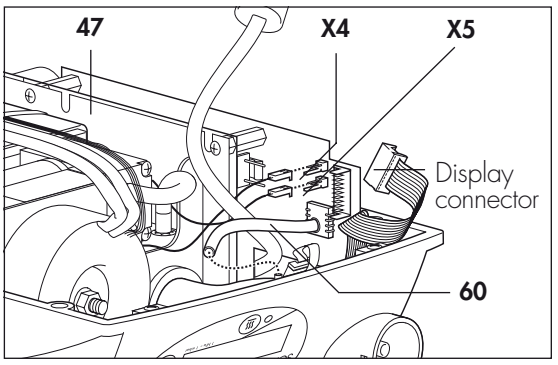
    The colours are likewise indicated as abbreviations on the Powerboard.



25. Carefully insert the boards into the upper part of the housing again. When doing so, run the connecting cables **48** and **49** along under the Smartboard/Softboard.

    Caution!
    Make sure that no cables are jammed between the housing and the boards.

26. Fit the pressure measurement tube **60** onto the stub at the device outlet port.
27. Connect the display connector to the Smartboard/Softboard.
28. **Does not apply to SOMNO*soft*+:**
    Attach the plug of the microphone cable **X5** (marked on the board as "**MIC**") and the plug of the oscillation generator cable **X4** (marked on the board as "**OGEN**"), and also the display connector to the Smartboard.



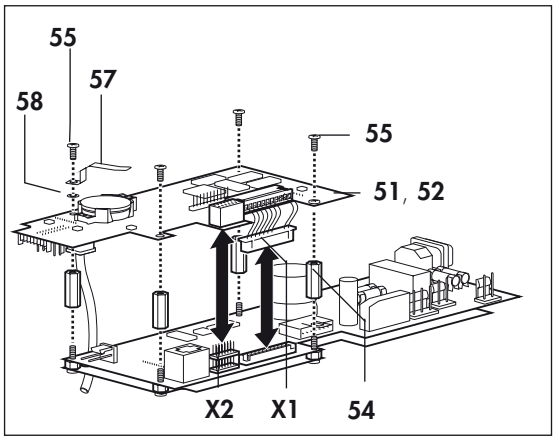
29. Close the device (see "7.3 Closing the device" on page 24).
30. Perform a test (see "5. Test the device" on page 15).

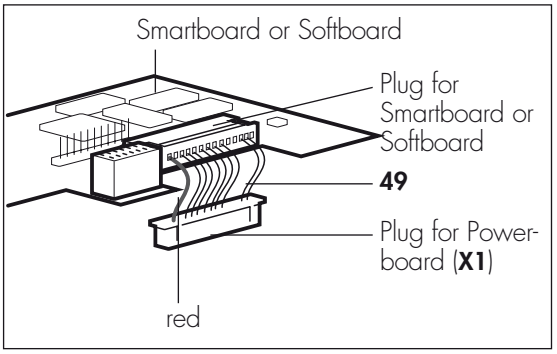
7.8 Replacing the Smartboard/Softboard

Tools and equipment required:

- ESD workplace,
- Allen key 3 mm,
- Phillips screwdriver size 1.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Carefully remove the Powerboard **47** (see "7.7 Replacing the Powerboard" on page 27, steps **5.** to **14.**).
3. Disconnect the plug of the connecting cable **49** from the Powerboard. Smartboard/Softboard and Powerboard are now completely separated.





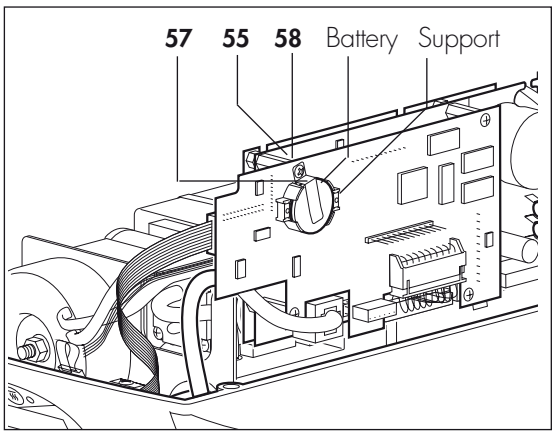
Caution:

Make sure you do not confuse the two plugs for the connecting cable **49**.

4. Place the defective Smartboard/Softboard on one side.
5. Connect the plug of connecting cable **49** firmly to the new Smartboard/Softboard and to the Powerboard.
6. Carefully place Smartboard **51**/**52** or Softboard **53** on the new Powerboard so that plug **X2** of the Powerboard fits into the corresponding coupling on the Smartboard/Softboard (see double arrow in diagram).
7. Now fit the Powerboard **47** (see "7.7 Replacing the Powerboard", steps **18.** to **28.**).
8. Close the device (see "7.3 Closing the device" on page 24).
9. Reset the date and time and the therapy parameters. To do so, either use SOMNO*adjust* or proceed as described in the setting instructions for SOMNO*smart* 2/SOMNO*soft*+ or the operating instructions for medical staff for SOMNO*set*.
10. Perform a test (see "5. Test the device" on page 15).

7.9 Replacing battery on Smartboard or Softboard

1. Open the device (see "7.2 Opening the device" on page 23).
2. Loosen the screw **55** on the battery holder and remove the spring **57** and the sealing washer **58** from the Smartboard/Softboard. Place the parts on one side.
3. Remove the battery from its holder on the Smartboard/Softboard.
4. Insert a new battery.
5. Place the spring **57** and the sealing washer **58** on the battery holder on the Smartboard/ Softboard and fix the two parts with screw **55**.
6. Close the device (see "7.3 Closing the device" on page 24).
7. Reset the date and time. To do so, either use SOMNO*adjust* or proceed as described in the setting instructions for SOMNO*smart* 2/ SOMNO*soft* + or the operating instructions for medical staff for SOMNO*set*.
8. Perform a test (see "5. Test the device" on page 15).



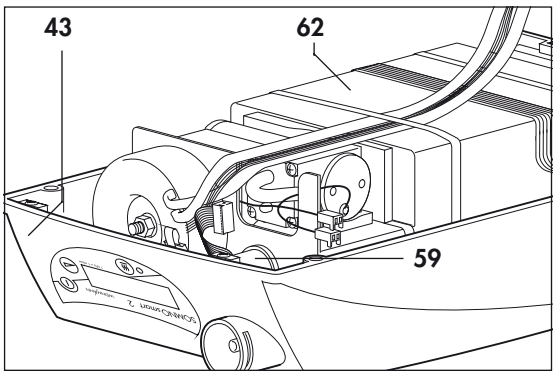
7.10 Replacing transformer

Tools and equipment required:

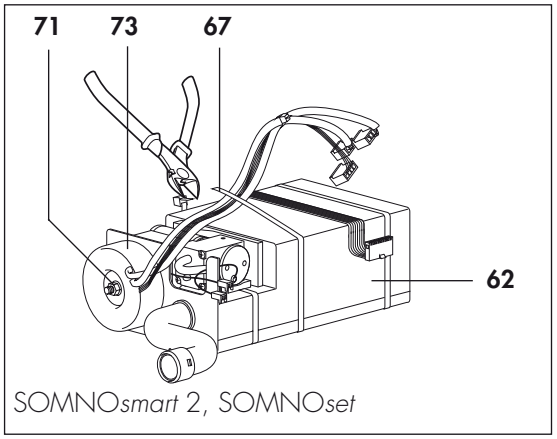
- ESD workplace,
- Allen key 3 mm,
- Torque wrench,
- Tubular hexagon box spanner 8 mm,
- Cable binder pliers, set to setting 4,
- Diagonal cutter.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Carefully remove the Powerboard **47** (see "7.7 Replacing the Powerboard" on page 27, steps **2.** to **10.**).

3. Carefully pull the connecting tube **59** out of the device outlet port. Lift the filter holder and filter out of the device.
4. Lift the box **62** together with the connecting tube **59** out of the upper part of the housing **43**.



5. **SOMNO*smart* 2 and SOMNO*set* only:** Use the diagonal cutter to cut open the middle cable binder **67**.

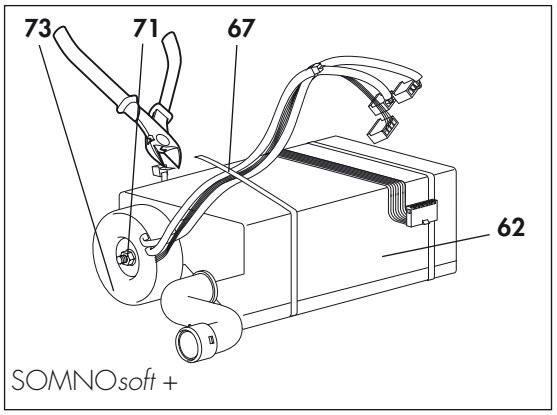


SOMNO*smart* 2, SOMNO*set*

or:

SOMNO*soft*+ only: Use the diagonal cutter to cut open the front cable binder **67**.

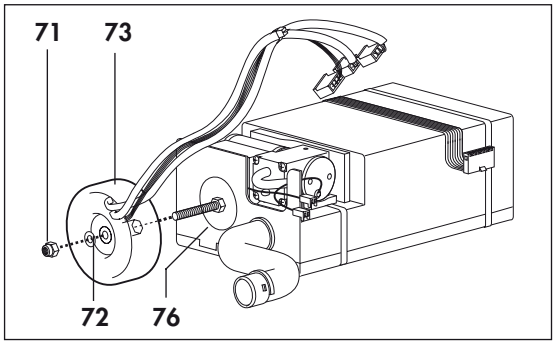
6. Unscrew nut **71** with the tubular hexagon box spanner.
7. Remove the washer **72** from the bolt.
8. The transformer **73** is attached to an adhesive disc **76**. To remove it, prise it off carefully by means of the plastic disc on the transformer.
9. Fit a new adhesive disc **76**.



SOMNO*soft* +

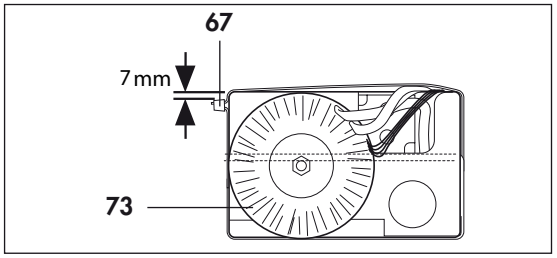
10. Slide the new transformer **73** onto the bolt and press it firmly onto the adhesive disc **76** to fix it.

    Make sure it is installed in the correct position: The connections must lie on the right below the upper edge of the box.
11. Place the washer **72** on the screw and screw the transformer tight with the new self-locking nut **71 using a torque of 1.6 Nm**.



12. Use a cable binder **67** to attach the cables for the transformer to the box **62** as shown in the illustration.

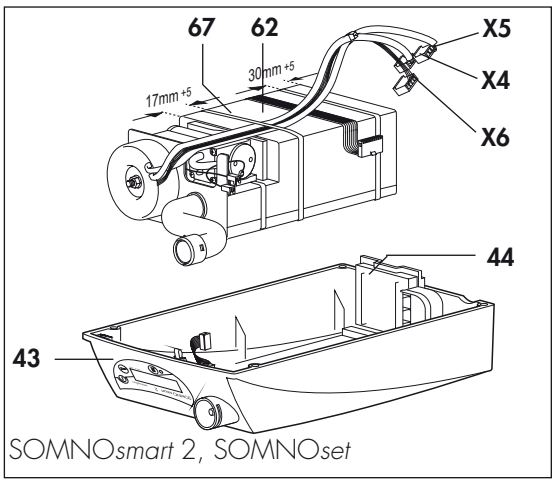
    Caution!
    The head of the cable binder must lie on the upper left side of the box.



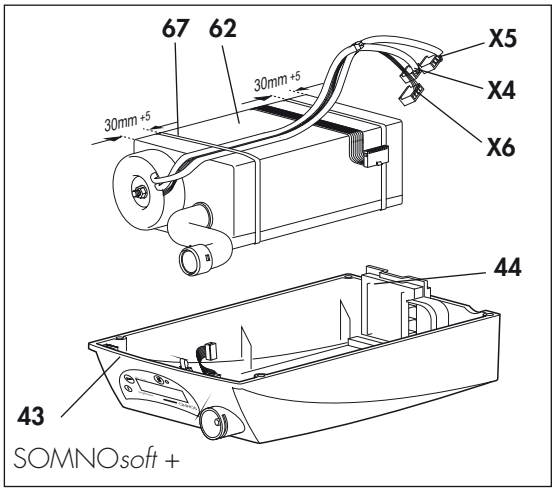
Align the cable harnesses as follows:

- On the left the cable harness with the connector **X5** (violet and red),
- in the middle the cable harness with the connector **X4** (grey and black),
- on the right the harness with the connector **X6**.

13. Insert the filter holder **44** in the housing cutout and hold it tight there.
14. Insert box **62** in the appropriate guides in the upper part of the housing **43**. Make sure that the filter seal **70** is not damaged.

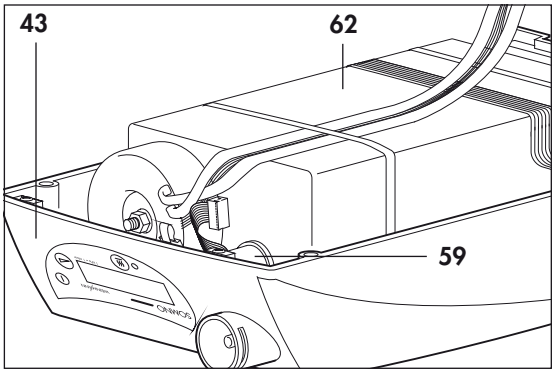


SOMNO*smart* 2, SOMNO*set*



SOMNO*soft* +

15. Fit the connecting tube **59** to the device outlet port. Apply a little 70%-strength isopropanol to the outside of the tube, to make it easier to insert the tube in the hole.
16. Raise the entire lower part of the device slightly and check whether you can see a crack of light through the device outlet port **7**. If so, correct the fit of the connecting tube **59**.
17. Now fit Powerboard **47** and Smartboard **51**/ **52** or Softboard **53** (see "7.7 Replacing the Powerboard" on page 27, steps **21.** to **28.**).
18. Close the device (see "7.3 Closing the device" on page 24).
19. Perform a test (see "5. Test the device" on page 15).



7.11 Replacing the oscillation generator (SOMNO*smart* 2 and SOMNO*set* only)

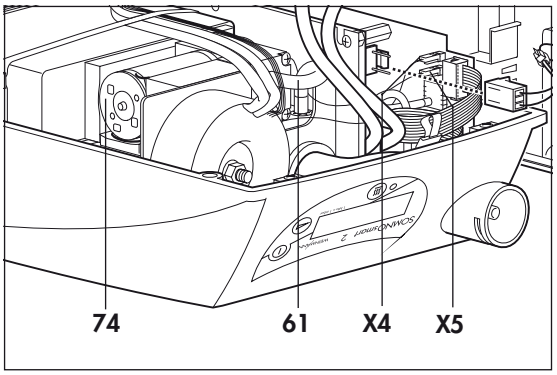
Tools and equipment required:

- ESD workplace
- Allen key 3 mm
- Cable binder pliers, set to setting 4
- Diagonal cutter

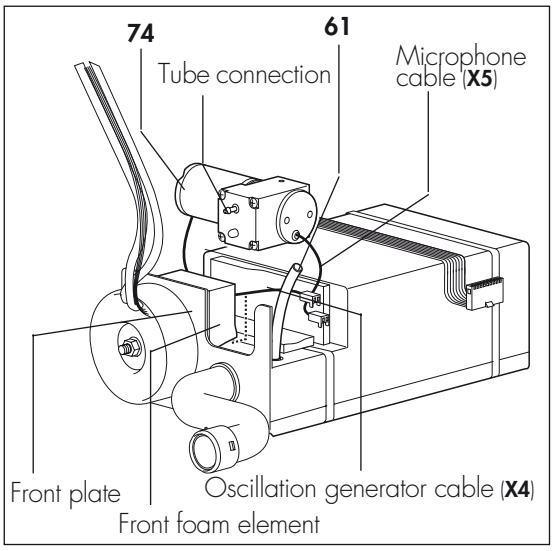
1. Open the device (see "7.2 Opening the device" on page 23).
2. Detach the connectors **X5** (microphone cable connection) and **X4** (oscillator generator cable connection) from the Smartboard.
3. Detach the silicone tube **61** from the connection on the oscillation generator **74**.
4. Lift the oscillation generator and the oscillation generator cable out of the foam. Take care not to impose too much strain on the cable. Otherwise the cable could break.

Note

For the sake of clarity, the Smartbox is shown removed in the adjacent diagram. It is not necessary to remove the Smartbox when replacing the oscillation generator.

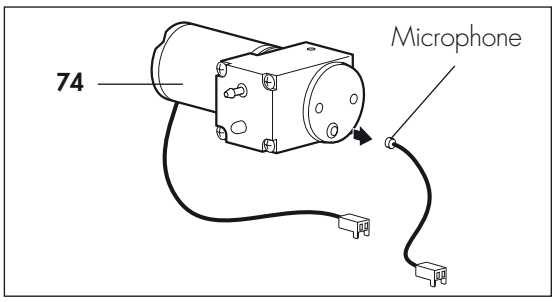


5. Insert the new oscillation generator. Position its cable so that it runs along under the oscillation generator to the Smartboard.
6. Push the silicone tube **61** onto the connection on the oscillation generator **74**.
7. Refit the the connectors **X5** (microphone cable connection) and **X4** (oscillator generator cable connection) to the Smartboard.
8. Close the device (see "7.3 Closing the device" on page 24).
9. Perform a test (see "5. Test the device" on page 15).



7.12 Replacing the microphone (SOMNO*smart* 2 and SOMNO*set* only)

1. Open the device (see "7.2 Opening the device" on page 23).
2. Take out the oscillation generator (see "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34).
3. Take the microphone out of the oscillation generator housing.
4. Place the new microphone in the oscillation generator housing.
5. Refit the oscillation generator (see "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34)
6. Close the device (see "7.3 Closing the device" on page 24).
7. Perform a test (see "5. Test the device" on page 15).



7.13 Replacing Smartbox/Comfortbox

Tools and equipment required:

- ESD workplace,
- Allen key 3 mm,
- Tubular hexagon box spanner 8 mm,
- Cable binder pliers, set to setting 4,
- Diagonal cutter.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Take out the transformer **73** (see "7.10 Replacing transformer" on page 31, steps **2.** to **8.**).
3. **Does not apply to SOMNO*soft*+:**
   Take out the oscillation generator **74** (see "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34, steps **1.** to **4.**).

You have now removed the old box **62**. Perform the steps in the reverse order to insert a new box **62** in the device:

4. Fit the transformer **73** (see "7.10 Replacing transformer" on page 31, steps **10.** to **17.**)
5. **Does not apply to SOMNO*soft*+:**
   Fit the oscillation generator **74** (see "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34, steps **5.** to **8.**).

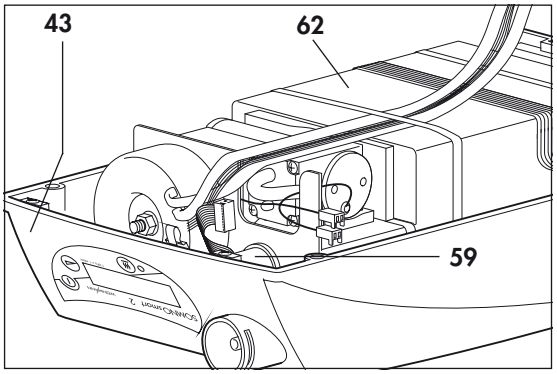
6. Close the device (see "7.3 Closing the device" on page 24).
7. Perform a test (see "5. Test the device" on page 15).

7.14 Replacing the fan

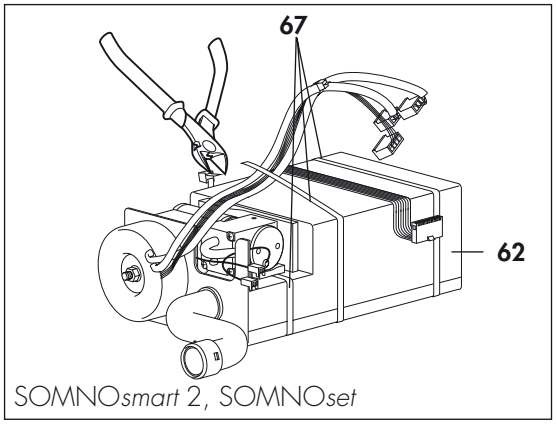
Tools and equipment required:

- ESD workplace,
- Allen key 3 mm,
- Cable binder pliers, set to setting 4,
- Diagonal cutter

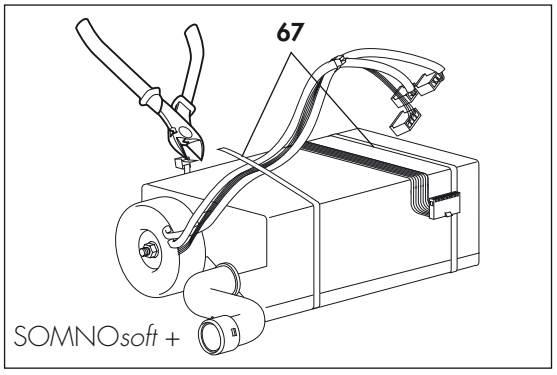
1. Open the device (see "7.2 Opening the device" on page 23).
2. Remove Powerboard **47** and Smartboard **51**/**52** or Softboard **53** (see "7.7 Replacing the Powerboard" on page 27, steps **5.** to **10.**).
3. Carefully pull the connecting tube **59** out of the device outlet port.
4. Lif the box **62** out of the upper part of the housing **43**.



5. Open the cable binders **67** with the diagonal cutter.



SOMNO*smart* 2, SOMNO*set*

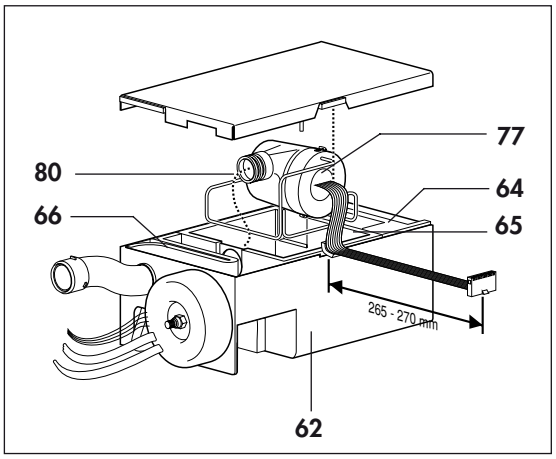


SOMNO*soft* +

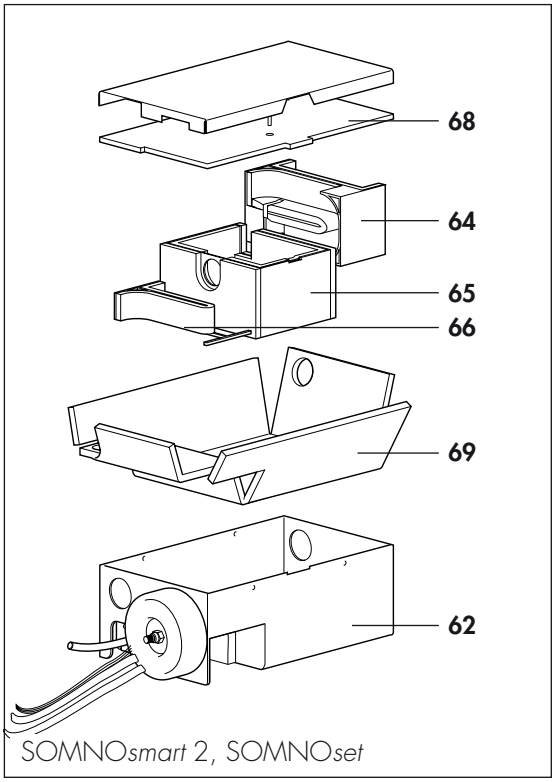
6. **Does not apply to SOMNO*soft*+:**
   Take out the oscillation generator **74** (see "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34, steps **1.** to **4.**).
7. Place the box to one side with the lid uppermost.
8. Open the lid of the box **62**.
9. Raise the back of the fan **77** and pull the decoupling tube **80** out of the hole in the motor frame **65**.
10. Remove fan **77** from the box **62**.

    If the same patient will be using the box, continue the repair starting at step **19.**.

    If the box **62** is to be prepared for a new patient or cleaned as part of the 10,000-hour/4-year service, proceed as follows:



11. **SOMNO*smart* 2 and SOMNO*set* only:**
    Remove the motor frame **65** and the labyrinth **64** and the labyrinth **66** from the box and dispose of them.

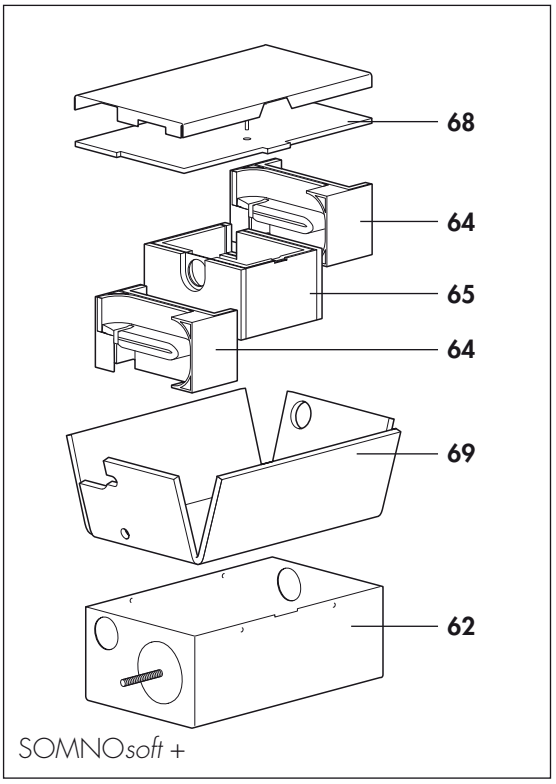


SOMNO*smart* 2, SOMNO*set*

or:

SOMNO*soft*+ only: Remove the motor frame **65** and the two labyrinths **64** from the box and dispose of them.

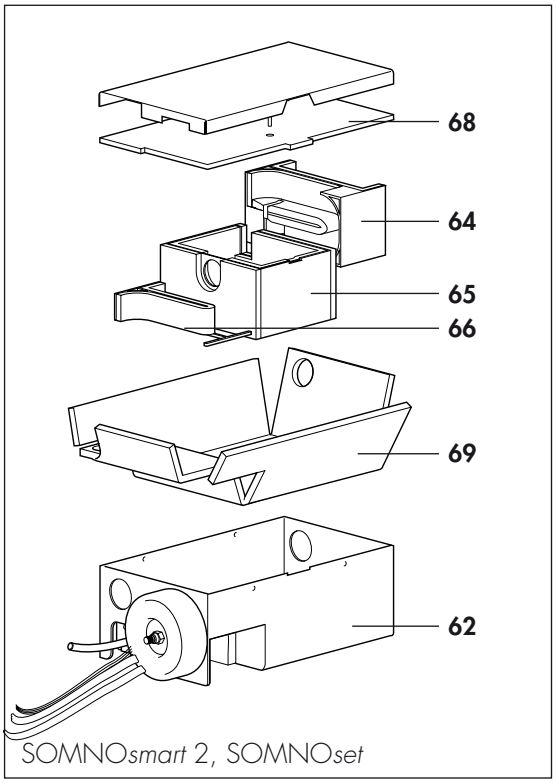
12. Remove the lid damper insert **68** and the box damper insert **69** from the box and dispose of them.
13. Clean the box with a vacuum cleaner and clean up any extremely soiled parts.
14. Disinfect the box with MIKROZID LIQUID (observe manufacturer's instructions).



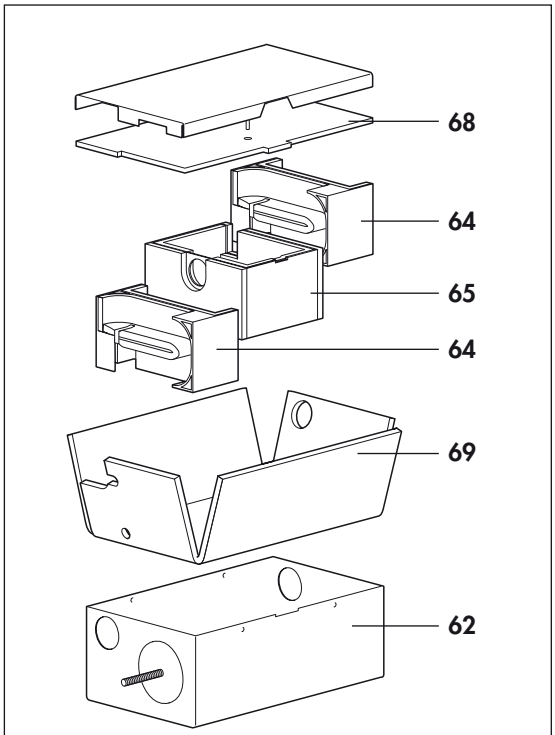
SOMNO*soft* +

15. As shown in the illustration, insert a new lid damper insert **68** and box damper insert **69**, and also the two new labyrinths **64** and **66** and a new motor frame **65** in the box **62**. Make sure it is installed correctly:
    - Insert the labyrinths as shown in the illustration.
    - The central hole in the motor frame **65** faces forward towards the transformer.

    Tip:
    It is easiest to push the motor frame **65** and labyrinths **64** and **66** into the box **62** together with the box damper insert **69**.

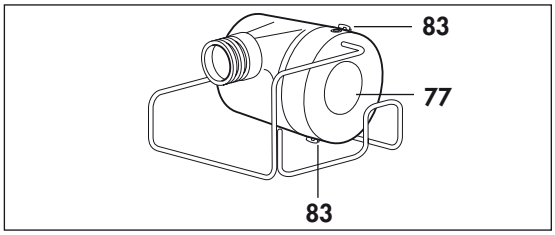


SOMNO*smart* 2, SOMNO*set*

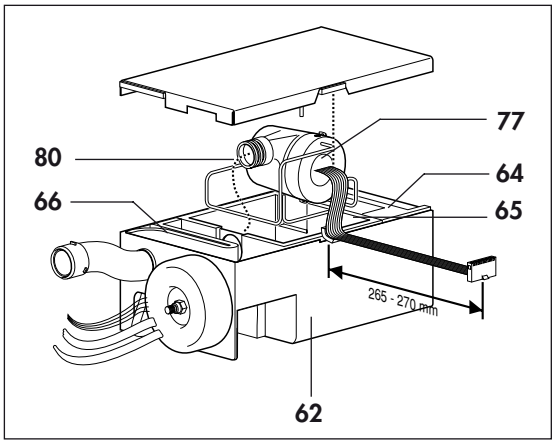


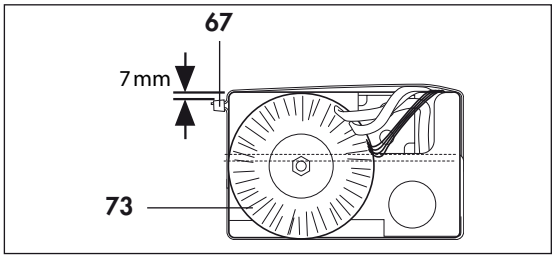
SOMNO*soft* +

16. Unscrew the two screws **83** of the fan cap and remove the cap.
17. Clean the fan, then disinfect it with MIKROZID LIQUID (follow manufacturer's instructions).
18. Refit the fan cap with two new screws **83** from the service pack.



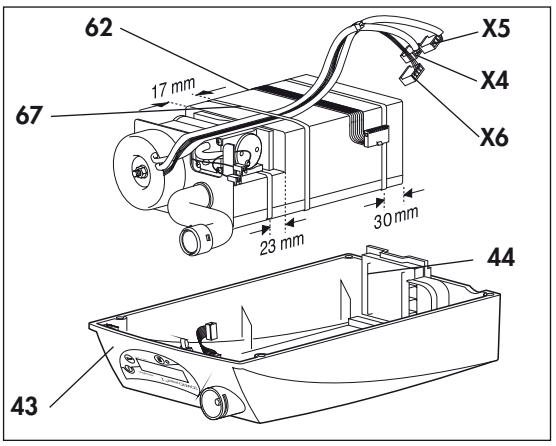
19. Insert the fan **77** in the motor frame **65**.
20. Apply a little 70%-strength isopropanol to the outside of the decoupling tube **80** and fit it in the appropriate hole in the motor frame **65**. The groove in the tube must snap into the hole all the way round.
21. Place the lid on the box **62**.
    Make sure the lid is correctly positioned. The cable harness for the fan must run through the cutout in the lid and must not be trapped anywhere. The cable must project between 265 and 270 mm.
22. Turn the box **62** over so that the lid is underneath.
23. Using the cable binder pliers, close the box at the back with a cable binder **67**.
24. Use a cable binder **67** to attach the cables for the transformer to the box **62** as shown in the illustration.



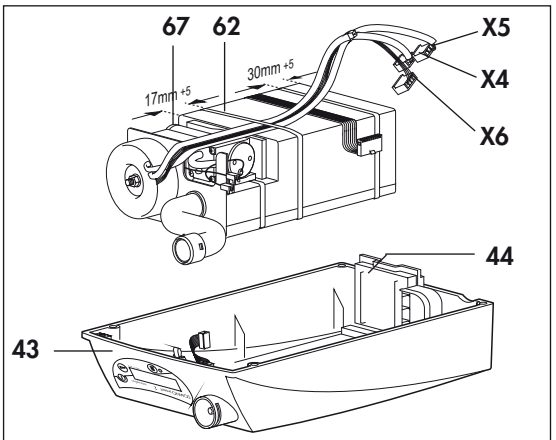


25. Fit the third cable binder.

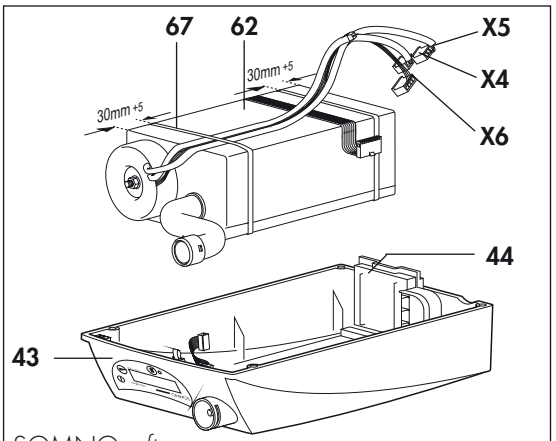
Caution!
The head of the first cable binder must rest on the supporting surface of the oscillation generator. The heads of the second and third cable binders must be located on the upper left side of the box. Align the cable harnesses as follows:
- On the left the cable with the connector **X5** (violet and red),
- in the middle the cable with the connector **X4** (grey and black),
- on the right the cable with the connector **X6**.



26. Pull the cable binders tight as shown in the adjacent illustration.
27. **Does not apply to SOMNO*soft*+:**
Fit the oscillation generator **74** as described in Chapter "7.11 Replacing the oscillation generator (SOMNOsmart 2 and SOMNOset only)" on page 34.
28. Insert the filter holder **44** in the housing cutout and hold it tight there.

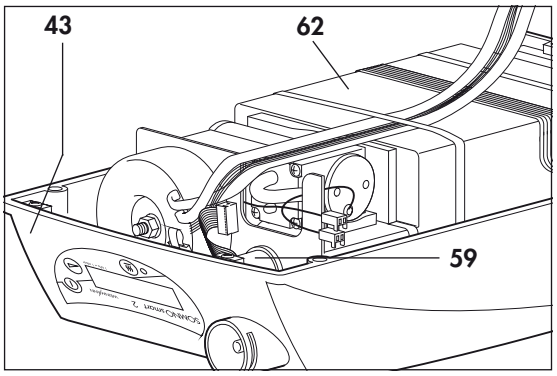


SOMNO*smart* 2, SOMNO*set*



SOMNO*soft* +

29. Insert box **62** in the appropriate guides in the upper part of the housing **43**. Make sure that the filter seal **70** is not damaged.
30. Fit the connecting tube **59** to the device outlet port. Apply a little 70%-strength isopropanol to the outside of the tube, to make it easier to insert the tube in the hole.
31. Raise the entire lower part of the device slightly and check whether you can see a crack of light through the device outlet port **7**. If so, correct the fit of the connecting tube **59**.



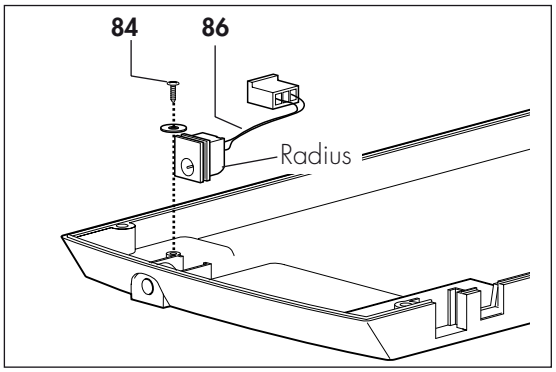
32. Now fit Powerboard **47** and Smartboard **51**/ **52** or Softboard **53** (see "7.7 Replacing the Powerboard", steps **21.** to **28.**).
33. Close the device (see "7.3 Closing the device" on page 24). Make sure that the transformer cable is not jammed under the front plate of the box.
34. Perform a test (see "5. Test the device" on page 15).

7.15 Replacing lower part of housing

Tools and equipment required:

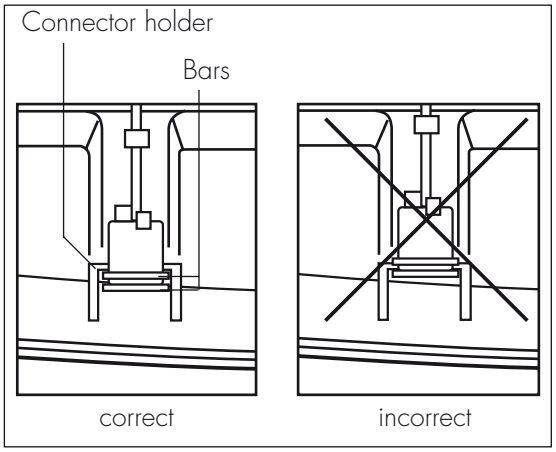
- Allen key 3 mm,
- ESD workplace,
- Phillips screwdriver size 1,
- Flathead screwdriver 0.5 x 3 x 100.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Undo screw **84**.
3. Lift out the humidifier connecting cable **86**.



You have now removed all the parts. You can now start to install them in the new lower part of the housing **42**.

4. Insert connecting cable **86** with the radius on the plug side **facing down** into the connector holder. Both bars on the connector must be **inside** the connector holder.
5. Fix the connecting cable **86** with safety washer **85** and screw **84**.
6. Close the device (see "7.3 Closing the device" on page 24).
7. Perform a test (see "5. Test the device" on page 15).

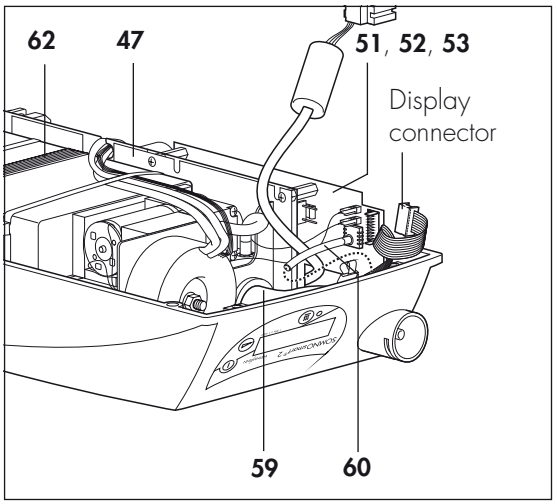


7.16 Replacing upper part of housing

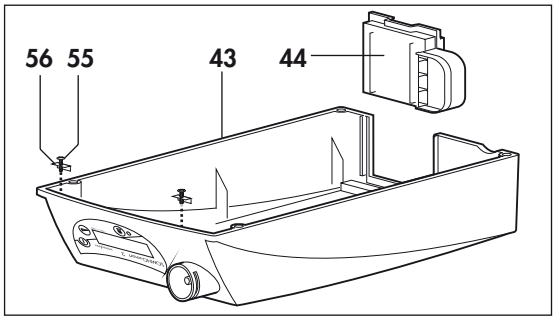
Tools and equipment required:

- Allen key 3 mm,
- ESD workplace,
- Phillips screwdriver size 1.

1. Open the device (see "7.2 Opening the device" on page 23).
2. Disconnect the display connector from Smartboard **51**/**52** or Softboard **53**.
3. Detach the pressure measurement tube **60** from the stub at the device outlet port.
4. Remove the filter holder **44**.



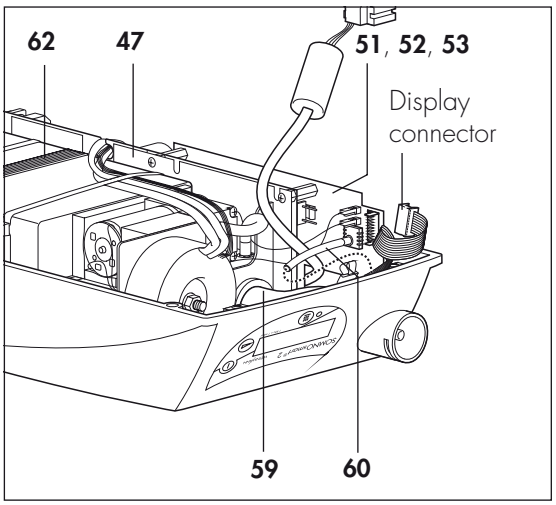
5. Carefully pull the connecting tube **59** out of the device outlet port.
6. Lift box **62** together with Powerboard **47** and Smartboard **51**/**52** or Softboard **53** out of the upper part of the housing.
7. Remove the display board (see "7.4 Replace Displayboard" on page 25, steps **3.** to **5.**) and also remove the screws **55** and the clamps **56**.

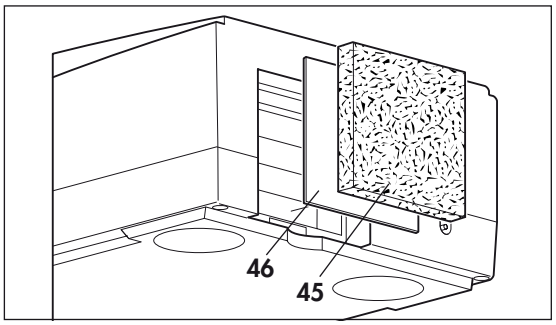


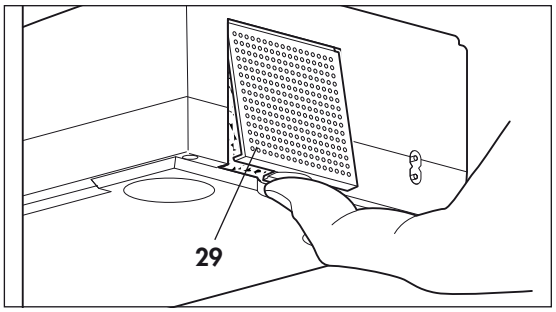
You have now removed all the parts. You can now start to install them in the new upper part of the housing **43**.

8. Refit the Displayboard **50** (see "7.4 Replace Displayboard", steps **6.** to **8.**).

9. Place box **62** and then Powerboard **47** and Smartboard **51**/**52** or Softboard **53** in the upper part of the housing.
10. Fit the connecting tube **59** to the device outlet port. Apply a little 70%-strength isopropanol to the outside of the tube, to make it easier to insert the tube in the hole.
11. Raise the entire upper part of the device slightly and check whether you can see a crack of light through the device outlet port **7**. If so, correct the fit of the connecting tube **59**.
12. Align the box **62** inside the device.
13. Fit the pressure measurement tube **60** onto the stub at the device outlet port.
14. Attach the display plug to Smartboard **51**/**52** or Softboard **53**.
15. Push the filter holder **44** with the filter side outwards down into the cutout in the housing.
16. Close the device (see "7.3 Closing the device" on page 24).
17. First insert a **new** fine dust filter **46** and then a coarse dust filter **45**.
18. Refit the filter cover **29**.
19. Perform a test (see "5. Test the device" on page 15).







8. Tools, testing equipment and disinfectants

This section lists all the tools and test equipment mentioned in these Service and Repair Instructions.

The specific tools and test equipment required in each case are listed in the individual chapter.

8.1 Tools

- Phillips screwdriver, size 1;
- Phillips screwdriver, size 2;
  for screws **83**;
- Flat-head screwdriver 0.5 x 3 x 100;
- Torque wrench, 1 - 12 Nm;
- Tubular hexagon box spanner 8 mm,
  for torque wrench;
- Allen (internal hexagon) key, 2 mm,
  for set screw **81** of motor mounting;
- Allen (internal hexagon) key, 3 mm,
- Cable binder pliers MK III,
  set to setting 4,
  obtainable from:
  Hellermann Tyton GmbH
  Grosser Moorweg 45
  D-25436 Tornesch

  Tel.: +49 4122/701-1
  Fax: +49 4122/701-400
- Knife with smooth, flat blade,
  for removing fascia film.
- Nail scissors or hole punch for marking the service label.

8.2 Testing equipment and fixtures

- Multimeter,
  to measure voltage, current and resistance;
- Hand pressure gauge,
  accuracy ±0.25%
  e.g. type Digima premo SR
  with pressure sensor **0–50 hPa**

  obtainable from:
  Special Instruments
  Henkersgasse 2; 86720 Nördlingen
  Postfach 1451; 86714 Nördlingen
  Tel.: +49 9081/220-61 or -62,
  Fax: +49 9081/220 63;
- SOMNO*support* WM 23975
- ESD workplace
- Control cable (2 m),
  required for setting pressure

  obtainable under No. WM 23772
  from the manufacturer, Weinmann.
- Remote control SOMNO*adjust*,
  for setting pressure

  obtainable under No. WM 23930
  from the manufacturer, Weinmann.

Note:
The pressure can also be set by means of the control buttons on the fascia panel.

8.3 Disinfectant

- TERRALIN
- Mikrozid Liquid
- GIGASEPT FF

obtainable from:
Schülke & Mayr GmbH
Robert-Koch-Str. 2
D-22851 Norderstedt
Tel.: +49 40 / 52 100 - 0
Fax: +49 40 / 52 100 - 318
internet: www.schuelkemayr.de

9. Spare parts

9.1 Spare parts list

Note:
The item numbers in the following table are identical to the numbers in the text of these Service and Repair Instructions.

Item No.	Description	Order No.
3	Power cord	WM 24133
8	Stopper for pressure measurement tube	WM 24115
12	Hose system	WM 24130
29	Filter cover	WM 24093
32	Carrying bag	WM 23717
37	Fascia film SOMNO*smart* 2	WM 24925
38	Fascia film SOMNO*set*	WM 23281
39	Fascia film SOMNO*soft* +	WM 24605
40	Cheese-head screw M4 x 8 ST-ZN	WM 50600
41	Cheese-head screw M4 x 40 ST-ZN	WM 51302
42	Lower part of housing with rating plate*	WM 24957
43	Upper part of housing with fascia film, SOMNO*smart* 2 Upper part of housing with fascia film, SOMNO*set* Upper part of housing with fascia film, SOMNO*soft* +	WM 24923 WM 23313 WM 24649
44	Filter holder	WM 24094
45	Coarse dust filter Set of 2 coarse dust filters	WM 24097 WM 15428
46	Fine filter, packaged Set of 12 fine filters	WM 23596 WM 15565
47	For SOMNO*smart* 2 and SOMNO*set*: Powerboard PCB, insulated, new Powerboard PCB, insulated, exchange For SOMNO*soft* +: Powerboard PCB, insulated, new Powerboard PCB, insulated, exchange	 WM 24948 WM 24958 WM 24166 WM 24033
48	Connecting cable	WM 24518
49	Connecting cable	WM 23345
50	Displayboard PCB	WM 24930
51	Smartboard PCB for SOMNO*smart* 2, new Smartboard PCB for SOMNO*smart* 2, exchange	WM 24980 WM 24919
52	Smartboard PCB, SOMNO*set*, new Smartboard PCB, SOMNO*set*, exchange	WM 23490 WM 24929
53	Smartboard PCB, SOMNO*soft* +, new Smartboard PCB, SOMNO*soft* +, exchange	WM 24660 WM 24619

* When ordering, please quote type, device no. and year of manufacture.

54	Distance piece	WM 24513
55	Fillister head screw M 3 x 6	WM 53020
56	Clamp	WM 24086
57	Spring for battery	WM 24953
58	Sealing washer	WM 1145/32
59	Connecting tube	WM 24064
60	Pressure measurement tube, silicone 2.5 x 1.5, 100 mm long	WM 23953
61	Tube, silicone 3/6, length 80 mm	WM 24036
62	Smartbox, new, preassembled Smartbox, exchange	WM 24960 WM 24956
63	Comfortbox, new, preassembled Comfortbox, exchange	WM 24039 WM 24044
64	Labyrinth, stuck	WM 24081
65	Motor frame, stuck	WM 24060
66	Smart-Labyrinth	WM 24963
67	Cable binder	WM 24013
68	Damper insert, cover	WM 24599
69	Damper insert, box (SOMNO*smart* 2, SOMNO*set*) Damper insert, box (SOMNO*soft*+)	WM 24908 WM 24598
70	Filter seal	WM 24011
71	Hexagonal nut DIN 985 M5 x 8 ST-GALZN	WM 51446
72	Washer A 5.3 DIN 125 MS NI	WM 50244
73	Transformer	WM 24128
74	Oscillation generator, complete	WM 24971
75	Microphone with connecting cable	WM 23864
76	Adhesive disc	WM 23538
77 **78** **79** **80** **81**	Fan with mounting comprising: – Fan, complete – Motor mounting – Decoupling tube – Set screw DIN 916, M4 x 6-V2A	WM 24014 WM 24031 WM 24027 WM 24028 WM 50743
82	Fan, complete, new Fan, complete, exchange	WM 24031 WM 24046
83	Flat-head screw ISO 7045 M4 x 6	WM 51393
84	Fillister head screw KB 30 x 6	WM 23159
85	Safety washer	WM 24088
86	Connecting cable humidifier	WM 24117
87	Service label: – for 2007 – for 2008 – for 2009 – for 2010 – for 2011 – for 2012	 WM 0438 WM 0498 WM 0499 WM 0300 WM 0609 WM 0610
88	Fuse F1; 2 A TH 250 V	WM 24636

89	Fuse F2, F3; F4; 500 mA TH 250 V	WM 24637
	Operating instructions, SOMNO*smart* 2	WM 16812
	Operating Instructions, SOMNO*click*/SOMNO*click* 300	WM 16719
	Short guide, SOMNO*smart* 2	WM 16821
	Patient pass, sleep apnoea	WM 16162
	Setting instructions, SOMNO*smart* 2	WM 16826
	Operating instructions, SOMNO*set*	WM 16970
	Manual for medical staff, SOMNO*set*	WM 16975
	Operating instructions, SOMNO*soft*+	WM 16961
	Short guide, SOMNO*soft*+	WM 16965

9.2 Spare parts required for servicing

Service pack, 5,000 hours or 2 years

Set WM 15662

comprising:

- 1 Coarse dust filter
- 1 Fine filter
- 1 Battery 3 V
- 1 Spring for battery
- 1 Sealing washer

Service pack, 10,000 operating hours or 4 years (SOMNO*smart* 2 and SOMNO*set*)

Set WM 15439

comprising:

- 1 Coarse dust filter
- 1 Fine filter
- 1 Damper insert for box
- 1 Damper insert for cover
- 1 Motor frame, stuck
- 1 labyrinth, stuck
- 1 Smartlabyrinth, stuck
- 3 cable binders
- 2 Flat-head screws
- 1 Filter seal
- 1 Battery 3V

Service pack, 10,000 operating hours or 4 years (SOMNO*soft*+)

Set WM 15439

comprising:

- 1 Coarse dust filter
- 1 Fine filter
- 1 Damper insert for box
- 1 Damper insert for cover
- 1 Motor frame, stuck
- 2 labyrinth, stuck
- 2 cable binders
- 2 Flat-head screws
- 1 Filter seal
- 1 Battery 3V

10. Technical data

10.1 Specifications

	SOMNO*smart* 2	**SOMNO*set***	**SOMNO*soft+***
Product category according to 93/42/EEC	IIa		
Dimensions W x H x D in cm	18 x 9 x 32		
Weight	approx. 4.0 kg		approx. 3.4 kg
Temperature range Operation Storage	+5 °C to +35 °C –20 °C to +70 °C		
Air pressure range	600 - 1100 hPa (automatic altitude compensation) (allows for operation in an altitude of up to approximately 4000 meters)		
Electrical connection	115/230 V AC, 50 – 60 Hz or 12/24 V DC (with inverter WM 24131 or WM 24132) (voltage drop should be max. 10 %)		
Power consumption Operation Standby	**230 V** **115 V** **24 V** **12 V** 0.1 A 0.2 A 1.0 A 1.9 A 0.015 A 0.03 A 0.14 A 0.29 A		**230 V** **115 V** **24 V** **12 V** 0.1 A 0.2 A 0.8 A 1.5 A 0.02 A 0.03 A 0.5 A 0.6 A
Classification according to EN 60601-1 Protection against electric shock Degree of protection against electric shock	Class II Type B		
Electromagnetic compatibility (EMC) acc. to EN 60601-1-2 Radio interference suppression Radio interference resistance	EN 55011 IEC 1000–4 Parts 2 to 6, Part 11		
Mean sound pressure level during operation EN ISO 17510 at 1m from device in patient position	approx. 31 dB (A) at 18 hPa approx. 29 dB (A) at 15 hPa approx. 27 dB (A) at 12 hPa approx. 26 dB (A) at 10 hPa approx. 24 dB (A) at 7 hPa		
Humidity, operation and storage	≤ 95% r.h. (no dew formation)		
APAP operating pressure range Pressure accuracy	4 to 18 hPa ±0.4 hPa (1hPa = 1 mbar)		
Max. marginal pressure for first error	< 30 hPa		

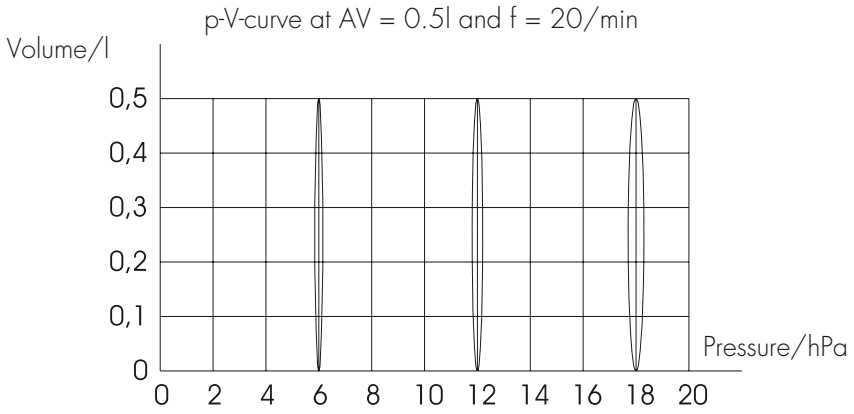
	SOMNO*smart* 2	**SOMNO*set***	**SOMNO*soft*+**
Flow at max. speed at: 18 hPa 12 hPa 6 hPa 0 hPa Tolerance	120 l/min 150 l/min 175 l/min 195 l/min ±10 l/min		100 l/min 130 l/min 160 l/min 185 l/min ±10 l/min
Respiration air heating acc. to EN ISO 17510	2.5°C		
Respiratory pressure fluctuation, measured in accordance with EN ISO 17510	at 6 hPa: Δp = 0.2 hPa at 12 hPa: Δp = 0.3 hPa at 18 hPa: Δp = 0.5 hPa		at 6 hPa: Δp = 0.4 hPa at 12 hPa: Δp = 0.4 hPa at 18 hPa: Δp = 0.5 hPa
Fine filter efficiency up to 1 µm up to 0.3 µm	≥ 99.5% ≥ 85%		
Fine filter service life	≥ 250 hours given normal room air		
⚠ Connections on side of device	Interface for setting therapy parameters, and also for medical staff to read therapy data with SOMNO*support* WM 23930 or SOMNO*support* WM 23975 or for controlling O_2 switching valve WM 24042. Maximum current consumption: 163 mA		
⚠ Front mounted port	Electrical connection for humidifier SOMNO*click*/SOMNO*click* 300		
Device inlet port	Inlet for room air at ambient temperature		
Device outlet port	Ambient air outlet at 4 - 18 hPa		

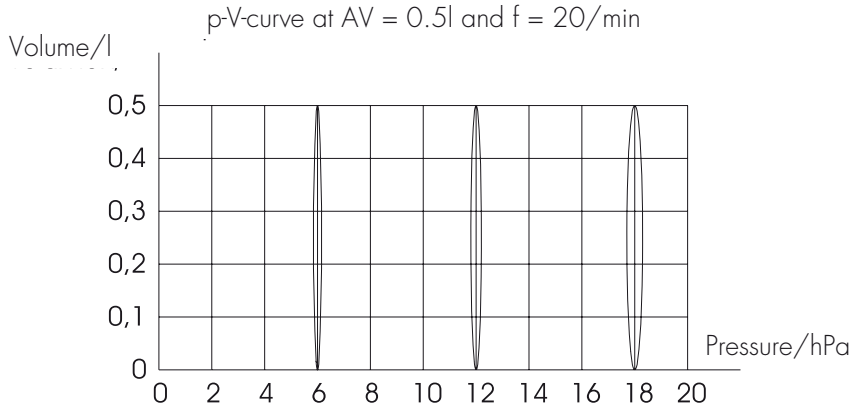
We reserve the right to make design changes.

CE 0197

10.2 Pressure-Volume curve

SOMNO*smart* 2/SOMNO*set*





10.3 Safety distances

Recommended safe distances between portable or mobile HF telecommunication devices (e.g. mobile phones) and the SOMNO*set*/SOMNO*smart* 2			
Rated output of HF device in W	**Safe distance depending on transmission frequency in m**		
	150 kHz - 80 MHz	**80 MHz - 800 MHz**	**800 MHz – 2.5 GHz**
0.01	0.04	0.04	0.07
0.1	0.11	0.11	0.22
1	0.35	0.35	0.70
10	1.11	1.11	2.21
100	3.50	3.50	7.00

11. Repair and service record

Device master data	**Service and repair work carried out in accordance with service instructions**			
Manufacturer: Weinmann GmbH + Co. 22525 Hamburg	Total operating hours	Comparative measurement (hPa) as per patient pass	Measures / Comments	Serviced in accordance with service instructions
Device type: ☐ SOMNO*smart* 2 ☐ SOMNO*set* ☐ SOMNO*soft* +				Company _____ Date _____ Signature
P_{min} as per patient pass:_____hPa P_{max} as per patient pass:_____hPa Pressure rise rate:_____ Mode:_____				Company _____ Date _____ Signature
Softstart initial pressure:_____hPa Softstart time: _____ Humidifier level:_____ Device No.:_____				Company _____ Date _____ Signature
Operator: _____ _____				Company _____ Date _____ Signature

For decades Weinmann has been developing, producing and marketing medical devices for markets around the world. In cooperation with our partners we design economic health systems for diagnosis and therapy in Sleep Medicine, Home Mechanical Ventilation, Oxygen Medicine and Emergency Medicine.

WEINMANN

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